The American horologist and jeweler

Vol. 21 June, 1954 No. 6

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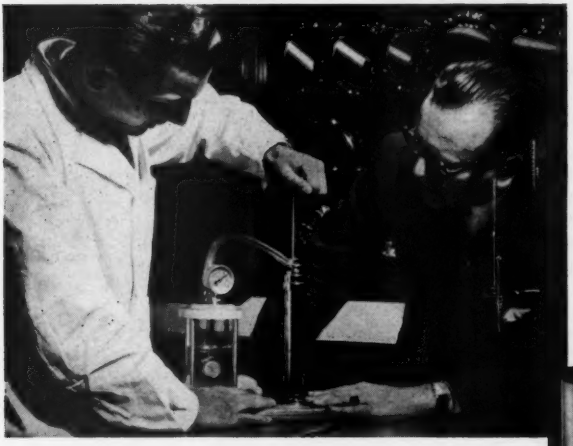

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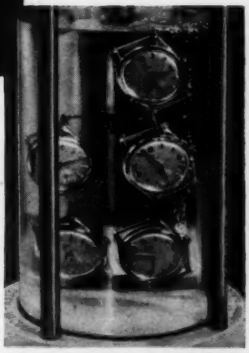

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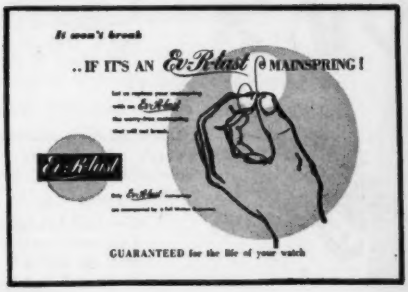

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Briefly, a 50 per cent increase in tariff is sought on imported parts and watches with 17 jewels or less (the current tariff amounts to an average 35 per cent ad valorem).

Questioning another tariff on watches

The Watchmakers of Switzerland reprint some of the most-asked questions that have been received from jewelers and watch suppliers. The accompanying answers indicate that a higher tariff on jeweled-lever watches with Swiss movements would have a definite effect on the retail jewelry business and on trade relations between Switzerland and the United States.

The Watchmakers of Switzerland

"If the increase were granted, a chain of destructive effects would be set in motion. American consumers would be confronted with higher price tags on watches. They would undoubtedly cut their purchases."

... from an editorial in the New York Herald Tribune, Feb. 10, 1954

Would watch prices go up or down?

"Every dollar of increase in tariffs would increase prices to retailers by nearly $3 and prices to consumers more than $6."

. . . from a 1951 Watch Tariff study by Professors Reavis Cox and Donald Blankertz, University of Pennsylvania

Would more or fewer watches be sold?

"Any increase in the price of watches to the consumer at this time would be certain to have a sales deferring effect and likely would further reduce the total volume of sales by retail jewelry stores."

. . . from the 1951 Tariff Commission testimony of a Virginia jeweler, spokesman for hundreds of other jewelers

Would the public benefit from a watch tariff increase?

"I have been in the jewelry business for approximately 37 years, during which time I have catered mostly to the working man, and I cannot help but feel like others do, that if a tax were imposed on watches in the *Swiss bracket*, that the working man would be put at a disadvantage."

. . . from the 1951 Tariff Commission testimony of an Ohio retail jeweler, representing other jewelers in that state

What is the effect of the present watch tariff?

"Reason why almost no foreign-made watches of more than 17 jewels are seen in the American market is the Reciprocal Trade Agreement with Switzerland which reduced tariffs on watches with 17 jewels and less but retained the high Smoot-Hawley duty of approximately $10.75 per watch on watches with more than 17 jewels. This leaves the 21-plus jewel watch market almost exclusively in the hands of domestic manufacturers."

. . . from the Northwestern Jeweler, March 1954

What is the over-all trade with Switzerland like?

"The Swiss, who have a market in the United States for little beside their watches, buy from us $48 per capita in American goods, while we buy from them 92¢ per capita in their products. From the standpoint of dollars, the benefits are clearly ours."

. . . from the Milwaukee Journal, February 1954

Would an increase affect only the jewelry trade?

". . . we want to stress again the importance of the forthcoming Tariff Commission's recommendations in the Swiss watch case—and the importance of the President's decision in that case.

"The watch case, for our friends in Europe, has become a 'symbol' for our foreign trade policy. It has been blown up far beyond its economic importance, both here and abroad. It is for this very reason that the President's decision in that case is of such importance.

"The fact that the national security argument has been brought into the Swiss watch case with a vengeance, no doubt, complicates the whole discussion considerably.

"The security argument should be determined by experts in that field. But even if the expert judgment is that something must be done for the watch industry because of security considerations, we feel strongly that there must be a sounder way of providing such assistance than an increase in watch tariffs at this particular time."

. . . from an editorial in The Journal of Commerce, May 12, 1954

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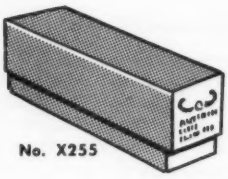

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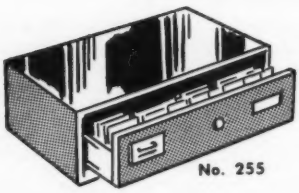

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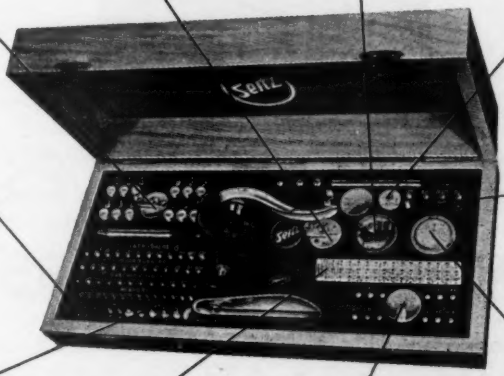

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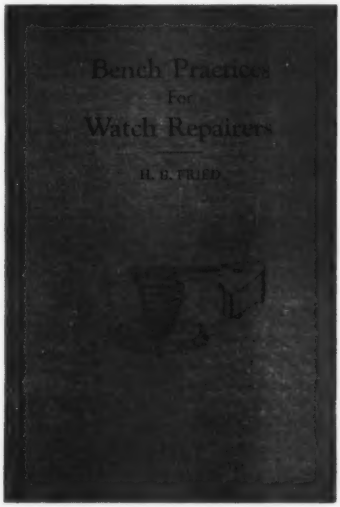

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Volume 21 June, 1954 No. 6

Influence of the Escapement on the Duration of the Oscillation of the Balance

By Jules Grossmann (1901)
CONTRIBUTED BY J. E. COLEMAN

Part II

If one of these two values is positive and the other negative, ▲T will become negative, and an advance will result. This is produced when the force acts in a direction opposite to the movement during the ascending demi-oscillation. We can, therefore, formulate the following general principle:

Every impulse given to the balance during the descending demi-oscillation, that is to say, before the passage from the position of rest, "accelerates" the oscillations, whilst every impulse acting during the ascending demi-oscillation "retards" them. This advance or this retardation is so much the greater as the influence is exerted at a greater distance from the point of rest, or as the amplitude of the oscillation is more restricted.

Reciprocally, every action, acting in a direction opposite to the movement, that is to say, every resistance, produces a *"retardation"* during the descending demi-oscillation, and an *"advance"* during the ascending demi-oscillation.

The inquiry can now be made in what way a force ought to act on a balance in order that its action should not modify the durations of the oscillations. The general answer is simple.

1. There will be no change in the duration if the angle *a* becomes null in the equation $\blacktriangle T = f\ (F\frac{a}{n\,o})$ when the force acts at the instant the balance passes the point of rest.

2. There will also be no change in the duration of the oscillations when the same force, acting in the direction of the movement or in an opposite direction, is applied on the two sides, and at the same distance from the point of rest. The angle *a* must therefore be equal on one side and on the other from the line of centers. On the contrary, there would be a change of duration if the force acted, for example, on one side in one direction, and on the other side in an opposite direction.

Consequently, these two essential conditions embrace the end to which every construction of escapement must tend.

"General Study of the Influence of the Escapement on the Duration of the Oscillations of the Balance." From the definition we have given of the mechanism of the escapement, it results that its functions may always be divided into three general periods: Period of Rest, Period of Unlocking and Period of Impulse.

Laying aside for the moment every other consideration, we may, however, examine

the special effect of each of these periods on the duration of the oscillation of the balance, and deduce from them considerations which will serve for the construction of these mechanisms. We will first put into ordinary language the two rules which have previously been enunciated:

1. The influence of an escapement on the duration of the oscillations would be annulled, if its contact with the balance could be reduced to an instantaneous shock, produced exactly at the moment of passing the point of rest on the line of centers.

2. The impulse ought to be produced with an equal force, according to two equal angles before and after the position of rest.

It may be stated that no system of escapement has yet fulfilled either of these two conditions.

Disregarding any special construction, we may examine the general effect of the escapement on the duration of the oscillations. We will suppose a balance, whose extent of vibration is 240° (two-thirds of a turn). The angle *a o* will therefore be 120°. Allow a course of 5° during the disengaging and 35° during the impulse. The sum of these two angles, that is 40°, forms what is called the angle of lift of

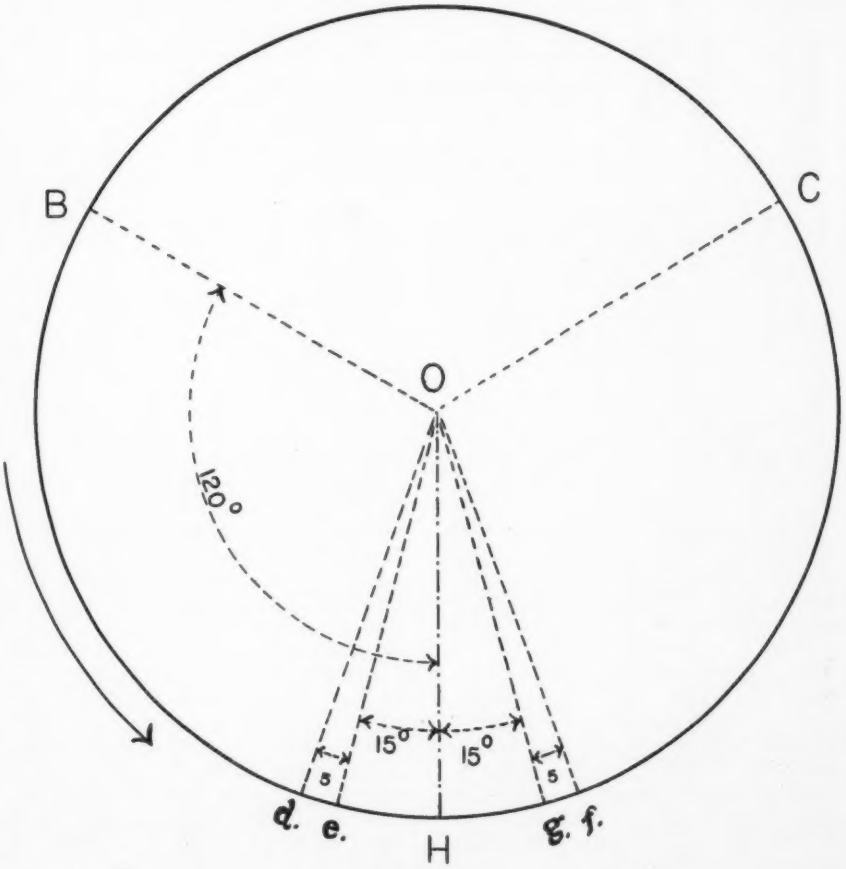

FIGURE 5

the balance; this angle is divided generally into equal parts on each side of the line of centers.

When the balance commences its movement at the point *B* (Fig. 5), it passes in the first place the angle *B O d* of 100°, up to 20° before the line of centers. During this passage the forces which act on the balance are, besides the force of the spring, the friction of the pivots, and if the escapement is a frictional escapement, that which results from the pressure of the escape wheel against the balance staff. The effect of these two frictions, acting as a retarding force, produces an increase of duration. This retardation will be exactly compensated by the advance produced by the same cause during the course of the angle *f O C* from 20° up to 100° after the line of centers, admitting as constant the resistive force of friction.

This effect will therefore be annulled by the entire oscillation. During the course of the angle *d O e* equal 5°, therefore from 20° up to 15° before the line of centers, the same forces may be supposed as still acting with a variable intensity, according to the kind of escapement, since this is during the unlocking of the wheel. The effect of this resistance will not now be compensated by an equal resistance on the other side of the line of centers. There will, therefore, be a retardation.

When further, the balance describes the angle *e O H* of 15°, it receives an impulse; which during the descending demi-oscillation, produces an advance. This advance will be compensated by the corresponding retardation from the effect of this same impulse, during the course *H O g* 15° of the ascending demi-oscillation. The impulse continuing afterwards from 15° to 20° will produce during this course of 5°, a new retardation.

In sum, we will have an increase of duration during the course of the two angles *d O e* and *g O f*. These two angles are equal.

"The escapement has the effect of retarding the duration of the oscillation."

If this retardation were regular, that is, if it preserved a uniform value for all amplitudes of the oscillations which the balance accomplishes, the rate of the watch would not be influenced, for there would be several methods of compensation. We know that the variations of the motive force have for an effect the modification in the formula ▲T of the values of *F*, and consequently those of *a o*. At present we are concerned with this question only to this extent—when a watch is placed vertically, the friction of the balance pivots becomes greater than when it occupies a horizontal position. There results necessarily a diminution of the amplitude of the oscillations in the vertical positions. The value of *a o* becoming less in the formula ▲T, we may conclude that: the rate of a watch will be more retarded in the short oscillations than in the long, and therefore more in the hanging than in the flat position; this, from the friction of the pivots alone, in correlation with the working of the escapement.

We are now able to announce the following rules, which may serve for the study and construction of escapements:

1. The friction of the balance pivots ought to be reduced as much as possible.

2. The angle passed over by the balance during the unlocking ought to be as small as practically possible.

3. The angle of lift of the balance ought to be reduced as far as the safety of the working of the escapement will allow.

4. The amplitude of the oscillations ought to be as extended as possible.

Horological practice confirms these four rules exactly. We will examine them in detail.

I have shown that the retardation in the hanging position proceeds essentially from the friction of the balance pivots, which diminish the amplitude of the oscillations and increase the retardation produced by the escapement. When considering the first rule, it should not be concluded hastily that it is necessary to make pivots smaller than absolute security demands. The jewel holes, in which the pivots revolve, ought to be short and of olive form. A part of the oil participates more or less in the movement of the staff, and it is important to so construct the pivots, the holes and the oil cups of the stones, as to reduce this movement of the oil. It is almost useless to add that the

pivots ought to be perfectly hard and polished, as well as the interior of the jewel holes.

The friction varies with the state of the oil, and cannot, therefore, be regarded as constant. As this force acts during the entire oscillation, and as we know that the influence of a force on the duration is so much the greater as its action is exercised nearer the commencement of the oscillation, we can comprehend one of the reasons why a watch, placed in the same conditions on different days, is nevertheless subject to very noticeable variations in its daily rate.

I have shown that this retardation proceeds from the size of the angle *d O e* (Fig. 5). If, then, a watch is subject to material retardation in the vertical position, it will be necessary to examine in the first place whether the security of action allows of reducing the angle passed over by the balance during the unlocking. The smaller this angle the less will be its influence on the adjustment. The value of the angle described by the balance during the unlocking varies with the system of the escapement. It depends on the angular value of the locking and the ratio of the length of the pallets.

The influence of a force acting on the balance depends also on the angular difference which separates its point of application from the position of rest, it is suitable to reduce the angle of lift as far as the practical execution will allow. It is dangerous for the accurate working of all kinds of escapements to lower the limit, which is easy of determination in each case.

The inertia of the mobiles, the play of the pivots, and the more or less accurate execution of the different pieces of the escapement, are so many factors which must be taken into account when determining this value. An angle of 45° may be considered as the maximum in the generality of cases, while it is difficult to go below 30° without risk of compromising the exactitude of the functions of the mechanism.

I have stated that the influence of the unlocking may be diminished by increasing the amplitude of the oscillations. This result ought, however, not be obtained by means of too light a balance, or by reducing the number of oscillations. In each of these cases, what might be gained in one direction would be lost in another. An increase in amplitude could be advantageous only when it is acquired at the expense of passing resistance and loss of force preceding from the faults of construction. All parts of the work, especially the train and escapement ought to be of precise execution. Thus, defective gearing should be remedied, drop of the escapement reduced, shocks avoided, the interia of the mobiles and the frictions diminished, and the balance so constructed as to pass easily through the air. The friction of the balance pivots are not only diminished by the reduction of their diameter, but also by a selection of the size of the balance, a balance large and light being capable of having the same moment of inertia as one small and heavy.

The general considerations mentioned enable us now to take account of the advantages presented by free escapements as compared with frictional escapements. It may be summed up as the freedom of the balance during the course of the arc of supplementary vibration, that is, the suppression of friction resulting from the contact of the escape wheel against the balance staff during the continuance of this course.

It may be objected to this conclusion that, according to the law of the influence of external force on the duration of oscillation, the friction proceeding from the contact of the escapement during the supplementary arc ought to have its influence annulled, since it exists as well during the descending demi-oscillation as during the ascending demi-oscillation. This objection would be valid if this friction had a constant value, and if the state of the fluidity of the oil remained invariable. It is easy to see that this is not the case, that on the contrary these two factors are variable quantities, and that consequently it is advantageous to suppress them as much as possible.

A cause of change in the duration of oscillation is thereby avoided, and the amplitude is simultaneously augmented, thus reducing the influence of the escapement.

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HEV: Will you explain how the term minute and seconds came about?

Answer: From a clipping by Francis Bentley, a prominent watchmaker and author, we quote: "When compared with a whole week, one minute is a very small division of time, yet life moves so quickly these days that we think in minutes, and even seconds. How many of us, even those of us who are directly concerned with timekeepers and timekeeping, know the origin of the terms or when they were first applied?

To our forefathers long ago, minutes, as a rule, were of little importance. Such a division of time was considered so small as compared with an hour that they called it one minute, pronouncing the word as we pronounce the adjective instead of the noun. It meant to them precisely what the name suggests, a minute fraction, one-sixtieth of one hour. When they came to require still smaller subdivisions of time, they divided each minute into sixty still smaller parts, which in the days of Queen Elizabeth of England, were called 'second minutes.' Small amounts of time of the second order of minuteness.

Thus it came about that a quantity or division of time sixty times smaller, or more minutes, than an hour we refer to, with never a thought of its origin, was called a 'minute.' Those smaller quantities or divisions, one sixtieth part of a minute in extent, which at first were referred to as 'second minutes,' we know familiarly today as "seconds."

NEY: At one of our guild meetings, the speaker mentioned the name of August C. Roze' as one of our early watchmakers who introduced cylindrical hairsprings. Can you tell me anything more of his history? Will you also give a short history of Thomas Mudge.

Answer: From our library we glean that August C. Roze' was born in Paris in 1812, and died in 1862. He was an eminent watchmaker, and used cylindrical chronometer hairsprings with reversal in the middle. He made a planetarium exhibit in 1844, and worked with Phillips on terminal curves of balance springs.

G. H. Baillie gives the following information: "Thomas Mudge, born 1715, died 1794, was apprenticed to and worked for Graham. He started in business in Fleet Street after Graham's death in 1751. He invented the lever escapement about 1757, made a lever watch for Queen Charlotte, but made few others. He was the first to use stones for pallets and impulse pins. From 1771 he worked on the development of the chronometer and sent his first for trial in 1774, and was eventually awarded 3000 pounds by a committee in the House of Commons. He is said to have made a minute repeater watch in 1750."

INFORMATION PLEASE

Directed by
W. H. SAMELIUS

Chairman, Science of Horology and Technical Advisory Board

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HD: I would like to know the meaning of the word "isochronism." I have always supposed the word meant, as applied to a watch movement, that such a movement was so adjusted that jarring or jolting would have no effect on the watch.

Answer: The word "isochronism" means equal time as applied to a hairspring so fitted or adjusted as to cause a balance to which it is attached to travel through different arcs in equal time. In other words, the watch will keep correct time whether the balance turns through one-half revolution or one and one-half revolutions.

LC: I have heard a lot about bad oil from some watchmakers who are continually complaining that the oil they get today is no good. It dries out or gums up in so many cases that they are compelled to clean and re-oil the watch in order to keep it going for one year. I am using the same oil as they are, but do not have the same trouble. Can you offer any suggestions which I may pass along to these watchmakers?

Answer: A lot of blame is put on watch oil for failure to keep the watch well lubricated and in most cases, the real trouble can be traced down to the workman himself. In the first place, he does not peg out the jewel holes, oil wells, or the face of the jewels after removing from the cleaning machine. There is always danger of some residue being left from the cleaning solution or rinse, and when residue is left in the hole jewel it will soon contaminate good oil, and, of course, create dissatisfaction. Any slight residue existing will contaminate oil, regardless of its maker, then again, you might take a glance at the watchmaker's bench and locate his trouble. You may find an oilcup uncovered and spilling over that has stood that way for weeks, chances are it is muddy with dust. At the back of the bench you may see a bottle of oil practically empty with a broken cork that perhaps has been there until it has become rancid by standing in the sunlight. One can hardly expect to avoid trouble when using oil under these conditions.

First, satisfy yourself that the jewels have been properly cleaned, and remove all doubt by careful pegging. Keep in mind that all double jewels must be removed and individually cleaned. No cleaning machine can clean double jewels without removing. It is good practice to thoroughly clean the oilcup each morning and fill it with just enough oil for the day's supply, keeping the oilcup covered at all times except when you are oiling a watch.

A bottle of oil costs approximately $1.50 or supply enough for over 300 watches, so that the cost of oiling would be approximately ½ cent per watch. It is the cheapest insurance to avoid oil troubles by taking care to keep the bottle corked, and cleaning the cork and the top of the bottle to avoid having any dust enter the bottle when removing the cork. It reminds me of a story that might refer to oil. A Kentucky colonel once said: "There is no bad whiskey, it is all good." This might apply to watch oil if properly used when the watch is properly cleaned.

HZ: I have a fine Swiss watch, 12S, in which the balance acts very sluggish when tested in the plates, and when the hairspring and escapement are removed. It does not run free, but stops too soon. The pivots are perfect. What can the trouble be?

Answer: Your trouble may be found in one of the following suggestions: The pivots may be too short to reach through the balance hole jewels to rest on the cap jewel. In that case, the cone of the pivot may be riding on the edge of the balance hole jewel or it could be that there is too much space between the hole and cap jewel.

The hole jewels may not be set properly so that the hole is tilting, causing a binding when balance is assembled in place. It might also have rough hole jewels or pitted cap jewels, then again, magnetism might have its effect. You say the pivots are perfect. It may be possible there is a sharp burr on the end of the pivot, not discernable only under a powerful loupe. Play safe and burnish off the corner of the pivot, as quite often the trouble is found at that point. Still one more suggestion: sometimes after brushing a balance wheel, a fine hair or piece of lint will get caught under the balance screw and cause a dragging motion on the pallet bridge or center wheel.

RW: Occasionally I have the misfortune to tangle a hairspring either when cleaning it or it gets tangled in the cleaning

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machine, and I have an awful time trying to unloop the coils. Is there any safe or good way to undo a tangled hairspring? Any suggestion will be appreciated.

Answer: To untangle a hairspring at best is not an easy job, and perhaps not always successful, but with patience and practice, the job can be accomplished. There are no set rules or ways to follow, as in most cases, it is an individual job, and must be handled according to the condition of the hairspring. The following suggestions may be helpful: One way is to place the hairspring on a flat surface then with a needle and a fine pointed tweezer begin operating. Hold the needle point between the inside coils that are not crossed, with the fine pointed tweezers grip the coils and pull them through the needle point, and as you are carefully pulling the spring you will find that the overlapped coil will gradually keep slipping until you come to the last coil. It is then an easy matter to lift the outside coil over the stud and the job is complete. You must be careful not to kink or pull the coils out of shape. With some practice on larger springs first you will acquire the touch and master it. Another way is to hold the balance with the left hand and with a pair of tweezers grip the stud, lift it up so the hairspring is bee-hived, and rotate the stud in the rotation of the spring coils. This operation will bring the crossed coil out to the stud end where the stud can be easily unlooped with the tweezers. Again I repeat, try this method on some larger springs first to get the idea. The method is not infallible, but many springs may be saved that otherwise would be discarded.

WLW: What is considered proper tolerance for freedom to allow for width of mainspring so as to have free action of the mainspring when the cover is replaced?

Answer: For a barrel with a flat cover, use a mainspring 1/10 mm less than the measured depth of the barrel from the bottom of the barrel to the cover seat. You will not have any difficulty with mainsprings binding in the barrel if you use only genuine material, and see that you get the proper spring made by the manufacturer for that particular movement. All jobbers issue material catalogs that will give you all the required information.

JHH: Is there any method to cover articles which are exposed to wear, with a coat of celluloid? Lacquer or shellac does not last.

Answer: Dissolve some clear scrap celluloid in 3 parts ether, 1 part alcohol until the mixture is the consistency of cream, then apply this solution with a fine brush or spray gun.

SCKC: How many tones are struck on the Westminster chimes during a twenty-four hour period? I have trouble making some of our chime clocks run for a full week. What do you suggest may be the trouble?

Answer: Many of our chime clocks are allowed to run too long between servicing, consequently they run dry causing worn pivots or holes worn slightly out of round. When the clock is cleaned, the rough pivots will cause friction and even bind when pressure is applied. You must take care, re-polish the pivots, and bush the holes with bushings. Closing the pivot holes by using a punch is not very satisfactory as the plates are quite thin, and this method only makes the stock thinner, results in a very small bearing surface, and not a lasting job.

In many cases you may find that the clock has been serviced several times, and the springs have become gummy. Regardless of how much work you do to the train of the clock, it cannot give service with dry or gummy mainsprings. It is always a good practice to remove the mainspring for cleaning, and at the same time you can determine whether the spring has set, for no matter how well you clean the mainspring, if it is set it cannot pull the clock for a full week.

If you analyze the number of strokes the hammers must make during 24 hours, you will find that on the chime side it strikes 40 strokes per hour or 960 times per 24 hour period, or 7280 times per eight days. The hammer for the hour strike is struck 1248 times during eight days, so you can see the mainspring has considerable work to perform.

HY: I have in my shop for repair, an 18S key wind open face watch with nickel case. The plate is lettered "Hyde Park, Chicago Watch Company." Was there ever such a factory in Chicago, and can

you give the history of this watch?

Answer: The watch you have was made by the New Haven Watch Company, New Haven, Connecticut. In the American Jeweler, June 1889, we find an ad illustrating three movements all marked Chicago Watch Company, sold by B. F. Norris—Allister & Company, as follows: "The Pullman—11 jewels, priced $2.25; The New Haven—11 jewels, priced $2.50; The Hyde Park—11 jewels, priced $3.50, less 6%." The ad also states that B. F. Norris & Company had purchased and controls the entire production of these movements, and will give their dealers buying twelve movements at one time or one order, the exclusive right to sell in their town.

JMcD: How can I produce the dead flat and high polish on brass settings held in place with Jewel screws such as we find on high grade watches? My attempts have all proven failures. I don't seem to get them flat, and the polished surfaces are full of fine lines.

Answer: There are several ways to obtain the results you seek. One way, after the setting has been fitted to the plate and recessing completed for the screw heads, procure a small plate of plate glass about two inches square, then with another small piece of glass frost the surface by using very fine oilstone power and water. With a circular motion holding the two glasses together, a fine frosted surface is soon obtained.

After the glass has been cleaned, hold your setting on the glass and with finger pressure or using a cork, the surface of the brass setting can be ground perfectly flat. This is done in a circular motion, then to obtain a polished surface you can use a burnish back file. The file must be prepared by first grinding it perfectly flat on the coarse side of an India oilstone and finishing up on the fine side of the stone. It is very important that the surface of the file is dead flat, then with a fairly fine buff stick, cross line the file.

The secret of good results is now obtained with a little experimenting. You may have to try two or three times with different grades of buff sticks. When the file has been prepared, it must be thoroughly cleaned and dry, and the jewel setting thoroughly clean and dry. Now lay the setting on the file, and with a tissue paper

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cot on your fingertips, apply pressure to the jewel, making a few strokes lengthwise with the file across the grain. You will find there is a little knack in getting results; the knack is to apply just the right amount of pressure, if you apply too much pressure you will burr the surface of the setting, and the surface will have a chocolate color. If you don't apply enough pressure, you will find lines in the setting not entirely removed.

Another way to get results is to grind the setting flat on a piece of blue stone, keeping the surface wet. Blue stone, if roughed or grooved, can be easily filed dead flat with a medium cut file. After the setting has been ground flat, it can be polished on a boxwood lap using diamontine and oil, quite dry.

Some workmen obtain a high polish on brass by using a tin lap and crocus charged with oil, while other workmen use a jasper or agate stone. The surface of these stones is prepared by rubbing it down with a smaller stone using diamond powder and oil—this is also an experimental job, as different grades of diamond dust will leave surfaces either too coarse or too fine. In all cases, I repeat, that cleanliness is the biggest factor when polishing brass or steel surfaces.

RDC: I am up to my neck in trouble and hope you can help me. I took in an antique clock for repairs and the escape wheel was in poor condition. I removed the wheel from the pinion and sent it to a shop to have a new wheel made to order, and here is my trouble.

The escape wheel was lost in transit, and I am at a loss to know how many teeth it had so as to order a new one. I can find the diameter from the clock plates and the pallet. Will you explain in your column how I can determine the right number of teeth the escape wheel must have.

Answer: To solve your problem you must first know or determine the number of vibrations per minute that the pendulum makes. To do this, measure the length of the pendulum from point of flexation to center of bob, then use the following formula:

$$\frac{60^2 \times 39.14}{\sqrt{\text{Length of known pendulum}}} = \text{equals vibrations per minute}$$

Or you can start the pendulum in motion and count the vibrations the pendulum will make during one minute, then multiply teeth in train wheels beginning with the center wheel third wheel, and multiply the number of leaves in the third pinion by the number of leaves in the escape pinion. This will give revolutions that the escape pinion makes per hour. Again dividing by 60 will give the number of revolutions per minute. Now divide the revolutions of the escape pinion per minute by the number of pendulum vibrations per minute, and you will have the number of teeth in the escape wheel. However, as each tooth in the escape wheel gives two impulses, you must divide by 2 and the final answer will be the number of teeth in the escape wheel.

CO: I am thinking of taking the examination for certified watchmakers certificate and would like to learn what the acceptable tolerance is for balance end shake. It seems no two watchmakers agree on what is correct. Can you enlighten me as to the correct amount of end shake the balance should have as I am anxious to pass this examination with the highest marks possible. How much space must be allowed between the cap jewels and balance hole jewels?

Answer: It is true that all watchmakers do not agree on just what amount of end shake is correct as some watches with apparently too much end shake will keep time as well as one where the end shake is too close. Your writer has found that the examiners on the examining board seem to have their own opinions as to the amount of end shake permissible when examining the watch, and consequently, watches are accepted or rejected according to the individual opinion of the examiner.

I have found that some boards allow 4 points for end shake, but they do not state in dimensions what these points represent, and to test for end shake is made by manual test rather than actual measurement, so your writer cannot give you any definite information on that score. However, the general practice in good watch work when repairing high grade watches, is to allow about .02mm for end shake, and about .001 inch for space between the cap and hole jewel. That space will create capillary attraction, holding the oil around

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the pivot, and continue to retain lubrication.

LL: It sometimes happens, when poising a balance wheel, that a very slight change is necessary to bring the balance to poise. What is the best way to make that little change? Please give the method followed by most good workmen through your information column.

Answer: There is no one method followed by most good workmen to remove either a very little or some amount of weight from the balance screw. When poising a balance several methods can be applied, and a good workman will adopt in a particular case, whichever method is the best. This depends partly on the make of the watch at hand, and partly on the amount of metal to be removed.

When very little change is required, one of the quickest and surest means of lightening the screw at the heaviest point is by means of a very fine saw. A stroke or two will take very little of the material from the bottom of the slot of the screwhead. The balance should be held in a boxwood tweezers, and a very fine poising saw especially made for that purpose may be procured from your jobber.

When using the saw, be very careful to follow straight through the slot so the slot remains straight, sharp and clean cut. Bear in mind that this operation is for a very small amount of alteration. If it is required to move a considerable amount of metal, remove the screw from the balance, and with proper size undercutters, remove some material from the underside, but see that the undercutter is smaller in diameter than the screwhead itself.

There is still another method that has come into use recently. Some countersinks are on the market which have a pair of jaws to straddle the screw head, and then a three-cornered countersink is run through the handle, allowing the countersink to contact the center of the screw. By this means, a countersink is made into the head of the screw, also cutting away some of the screw slot.

When poising a balance, do not make too much of a change or remove too much material without testing your progress. You can always take a little more off, but it is annoying to put metal back in the way of washers.

DHA: Recently I took in an old key wind watch for repairs. I had to supply a new hairspring, and if I do say it, I did a good job. The spring is perfectly flat in the round and free in the regulator. I counted the vibrations of the hairspring as the balance vibrated 300 a minute or 18000 per hour. After the job was completed, I put the watch on the timing machine and I was pleased with a nice straight line or perfect rate that the watch showed, but to my surprise, the next day it had gained terrifically.

I re-set the watch and the same thing happened again, and I am confused, for when the watch is carried or hanging it gains time, but on the timing machine it is perfect. Can you give me some idea what the trouble might be?

Answer: You say the watch is an old key winder, but you do not give the maker's name or number of the watch. Among our early watches, the balance vibrated differently from our modern pocket watch of 18000 per hour. We had the slow beat train that beat 4 times per second or 14400 per hour, then we had some that beat 4½ times per second or 16200 per hour. Undoubtedly you have run across one of these old watches, and fitted a hairspring that is entirely too fast for the train. To determine the vibrations the balance must make for this old watch, multiply the number of teeth in the 4th wheel by twice the number of teeth in the escape wheel, and divide by the number of leaves in the escape wheel pinion. This will give the vibrations the balance must make per minute, and you will again have to fit a hairspring to those requirements.

ESS: Will you answer this question: Is there any explanation why some people cannot wear a watch because it becomes magnetized from the electricity in their bodies? Your answer will be appreciated and it will be something I can tell my customers.

Answer: Your question pops up quite often and the answer is that the human body does not contain magnetism or electricity to effect the running timekeeping qualities or the stoppage of a watch. However, after a watch has been properly repaired, you will quite often have some slight regulations when the watch is carried as watches are more or less affected according to the wearer's habits. A person's

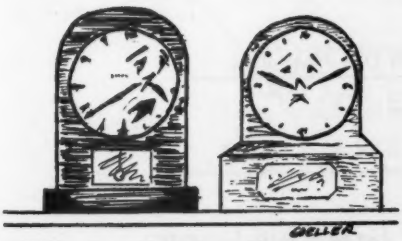
habits will have some influence on the rate of the watch.

If the watch fails to keep time there must be other reasons, principally mechanical ones that are overlooked in the servicing of the watch, then again, the owner does not take proper care of the watch and expects the impossible.

HF: Can you give any rule to go by when fitting a new hairspring to a balance as to how large the spring must be? I have learned how to figure to find vibrations per hour.

Answer: The diameter for your hairspring, as a rule, should not be smaller than the radius of the balance wheel measured from the outside of the rim nor larger than the radius of the balance plus the height of one balance screw.

The latter diameter varies somewhat with different model watches; if you are fitting a flat hairspring, a spring a trifle smaller is preferable to one which is a little larger. Where a flat hairspring is employed, the larger spring would not have freedom for development, and difficult to adjust to insure free action in all directions. If you are fitting an overcoil spring, the larger diameter is preferable as in the case of an overcoil spring there is ample space in all directions and there is no regulator pin to interfere with its development.



"Why, that old clock would stop a face!"

JEVIN

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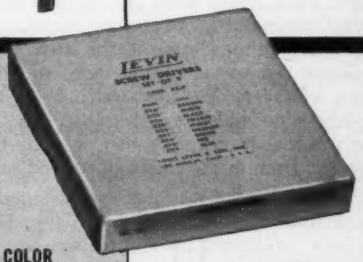

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Watchmaker's Contest

A.H.&J. Reader Ideas on Practical Bench Methods, Experiences or Tools.

A. H. & J. is pleased to announce the following winners of its third month's (May, 1954) Watchmakers' contest:

First prize: Balance truing and poising caliper goes to Mr. Claude Deaver, 40 Rivington Avenue, Long Branch, New Jersey, for his "Clock Arbor Tool," Contest Entry No. 13.

Second prize: 12-piece lathe set consisting of grinders, buffs, brushes and end mills, plus one movement holder goes to Mr. Woodrow Young, 221½ Plaza, Medill, Oklahoma, for his "Bench Heater," Contest Entry No. 12.

Third prize: Parts cleaning holder, cleaning brush and case rest goes to Mr. Robert E. Randall, Bob's Watch Repair Shop, Box 639, Anthony N. M.-Tex., for his "Removing Broken Crown Stems," Contest Entry No. 11.

FITTING WATCH STEMS PERFECTLY

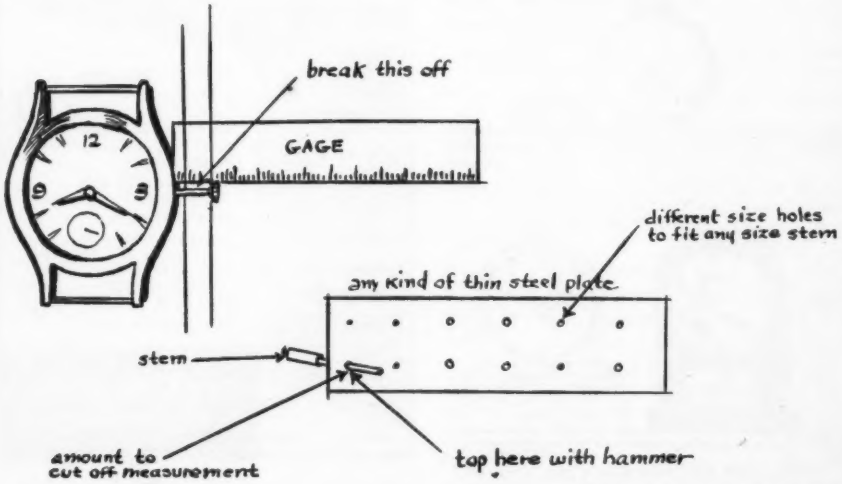
CONTEST ENTRY #15

I have discovered a way to fit watch stems, either dress or waterproof, with one trial, and get a perfect fit every time. First, never cut a watch stem, as cutting a stem causes the crown to not start on the threads and you then have to grind the stem.

Screw the crown on the stem, whether it's a waterproof or dress watch to be fit, as tightly as possible, insert the stem in the watch as if complete, then measure the distance from inside crown to wall of case. Check this measurement close, then loosen detent and take out stem.

Break off the measurement until you have about two threads, as the crown will screw on that much further and tighter when the stem is shorter. Screw on the crown and the job is complete.

Regardless of whether a recessed or flat crown is used, to break the crown I use an old draw plate in which I insert the stem, leaving the desired amount to be broken off protruding. I then tap this with a small hammer, and find the crown will then screw on perfectly.



PROTECTING DIALS FROM SCRATCHES

CONTEST ENTRY #16

After scratching several watch dials while removing the hands, I decided to lick this problem or bust. The perfect tool turned out to be simple as well as easily obtainable.

Just dull the edges of a "Marlin" double-edge safety razor blade, and use it to protect the dial. Being shaped as it is, it is ideal for this purpose, and being thin steel it will not break, rust or crack. It's thin enough to conform to curved dials, and I found that a slight magnetism given this old blade will help to attract the hands and keep them from slipping away.

ASBESTOS COVER TO HOLD HEAT

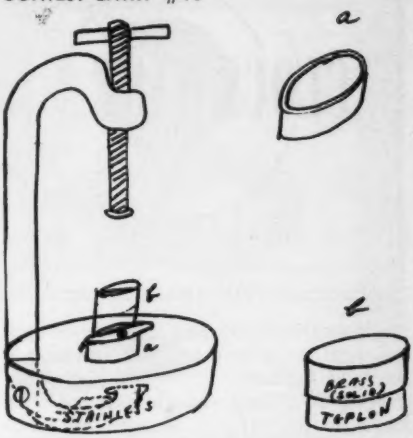
CONTEST ENTRY #17

I have one suggestion to make about the master cleaning machine which has a large exposed drying chamber on the bottom.

I have a piece of asbestos cover taped on the bottom, and this keeps all the heat in the compartment. It can also be placed on any finished cabinet which ordinarily wouldn't be trusted with heat exposed as on the aforementioned model, and it's very economical, too.

WATERPROOF CASE OPENER TOOL

CONTEST ENTRY #18



Here is a sketch of a tool a friend and I devised to open telescoping type waterproof cases, utilizing an ordinary "C" clamp and easily made accessories.

Placing correct size bezel rest on the base of tool, and the other attachment on crystal, pressure with "C" clamp easily forces crystal, movement and back of case out of bezel.

Care should be used in shaping the plastic disc to conform with the curve of the crystal in order to apply pressure evenly and not damage the crystal.

1-2-3 winners among this month's entries will win the following prizes:

First prize: Algron spring bar kit, 144 assorted sizes.

Second prize: One set of three Lamport jewel setting openers, plus one Gruen case rest.

Third prize: Parts cleaning holder, cleaning brush and movement holder.

CLOCKWISE...*and*...OTHERWISE

By J. E. COLEMAN

OTHERWISE

Cooperation this past month has been excellent — believe me, I'm watching it very, very closely. 1. We've been hammering at it long enough now for it to begin to pay off. 2. Recently we introduced a slight change by dropping the word here and there to our questioners that they mention "C. & O. gave the information".

We are constantly pleading with factories, jobbers and supply houses to furnish catalogs, data sheets and keep C. & O. on their mailing list in order that the files may be kept current, up to date. Cooperation from our regular readers has been good from the beginning and even it is improving, however, it is sometimes difficult to sell the idea to those who are not directly connected to or with the horological trade, or have never heard of C. & O. We believe that once a firm or manufacturer hears that C. & O. passed the information when, where or how to get his product, he will make sure that we are kept on the mailing list for new catalogs and releases of technical sheets, etc.

* * *

Is my face red? Read this fine letter from Mr. LeRoy Bennett of 1053 Coombsville Road, Napa, California:

Dear Mr. Coleman:

I was under the impression that I had corresponded with you before, but my files say no. In 1946 I had some correspondence with L. D. Stallcup when he was there in Nashville. He was working on an article on epicyclic trains as applied to timepieces and he borrowed a karrusel that I had—this is probably where I got the impression.

First of all I want to tell you how much I have enjoyed and appreciated your articles. I started reading Horology with Vol. 1, No. 1, so you can see that I am really tardy in letting you know that I have appreciated your writings. I hope that you will accept my apology and forgive me.

Now regarding the Cartwright French clock, you have asked, "If any reader has noted similar construction"? I have one of these clocks and know of two others, Dr. Stephens has one and there was one exhibited in the lobby of the Fels Planetarium of the Franklin Institute, Philadelphia, Pennsylvania, during October, 1946. They have classified it as a "Free pendulum Mystery Clock", and you will find this one pictured on page 114 of The National Association of Watch and Clock Collectors, Vol. II, No. 7, dated April, 1947.

The August, 1941 issue of the American Horologist & Jeweler contains an article by Dr. Stephens, well illustrated and covering this clock most thoroughly, both mechanically and historically. I rather believe that you have read this article and it has slipped your memory. Dr. Stephens, when he wrote the article, knew of one in England and I wonder if this isn't the one Mr. Cartwright has acquired. I believe you will find all your questions answered in the references I have given.

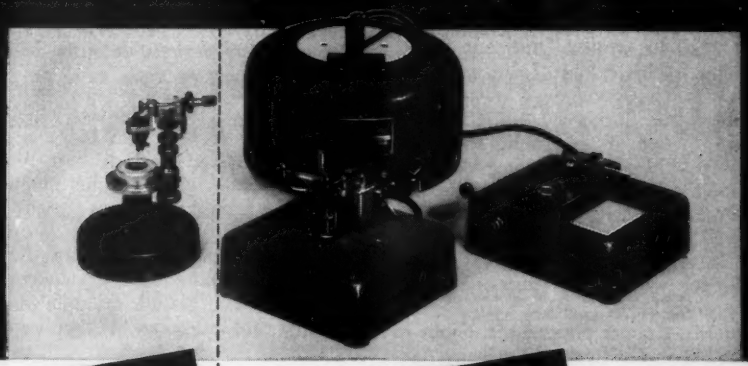
Now that the ice is broken, I hope to write again.

LeRoy Bennett

We caught the "Free Pendulum Mystery Clock" index card for the April 1947 Collector's Bulletin in the "F" division of

Mr. Coleman invites your questions. If your question requires a direct answer, please enclose a self-addressed, stamped envelope. It is impossible through correspondence to give valuations of antique timepieces; questions of this nature cannot be answered

Amazing development in hairspring vibrating!



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the file next day after mailing off that C. & O. manuscript. Wrote at once to Robert Franks at the Franklin Institute, and he passed the letter on to James Gibbs. On March 22nd he wrote: "Although I had two pieces in this exhibit, I did not see it myself. Ernest Cramer was in charge of the exhibit and I checked with him this morning to see if he could remember whose clock it was. He thought it belonged to the Franklin Institute. I checked with Dr. I. M. Levitt, who remembers the clock well, but said it was not the property of the Institute; he thought it was loaned by a French watchmaker from one of the jewelry stores".

Later Mr. Cramer phoned Mr. Gibbs to say that Maxin Goffinet, 431 Albany Avenue, Westmont, New Jersey, was the owner. Letter and Cartwright photo were forwarded to Mr. Goffinet via airmail. On March 27th he wrote: "In reply to your letter of the 24th, may I say that the clock you mention (Cartwright's) is not the one I had at the Franklin Institute. The one I have has a similar statue holding a clear glass and showing only the hands."

After receiving Mr. Bennett's letter, we checked Dr. Stephens' article, page 25, August, 1941 A. H. & J.—the cases seem to be identical. I'm reasonably sure that the mechanism in the Stephens clock is identical with the mechanism in the Cartwright clock. Dr. Stephens' clock has the statue of Diana, which statue holds the pendulum with her right hand—the Cartwright statue is slightly different and holds the pendulum up with her left hand.

B. H. Goldsmith, 2905 North Oakley Avenue, Chicago 18, Illinois, writes that he has the identical clock and offers further cooperation if Mr. Cartwright will write direct to him. Mr. Goldsmith's letter follows:

Dear Mr. Coleman:

In reference to your article on page 42 and 43 of your April issue, I wish to inform you that I have the exact clock that Mr. Cartwright is writing about. If he wishes any further information in regard to it he can write me direct. The original pendulum on this clock has a glass bob and from the suspension spring to the bottom of the pendulum is 13", to the middle of the bob is approximately 11". In the case of my clock, the date is marked 1826. This is not stamped on the works however.

As you know, I collect antique clocks and thought you might be interested in knowing that I have the identical clock which is in perfect shape and runs approximately two weeks on one winding. Might also add that in the American Jeweler publication in Chicago, in the January 1908 issue, there was quite a large article on my clock and a very good picture of the movement and the case.

B. H. GOLDSMITH

This is splendid help all the way around; now if we could locate a spare copy of A. H. & J. for August 1941 to send Mr. Cartwright when his photos are returned, we could say here is a pretty complete answer to your question. We could add that it is practical proof of the way collectors and horologists cooperate over here as well as a graphic example that setting up a card index can be complicated.

* * *

Nice letter from an old friend of the column, Luman B. Mommer, 819 South Calhoun Street, Fort Wayne 2, Indiana, which reads as follows: "For your files I am enclosing some splendid photos of a clock resembling the Cartwright clock in question." He points out that his is a conical pendulum movement. We've seen (and repaired) one of these, but did not have the opportunity for photographs, thus these supplied by Friend Mommer are most welcome.

* * *

William A. Phelps, 4601½ Glenway Avenue, Cincinnati 5, Ohio, comes out with the only clock tool we have to announce this month, a hand removing plier. This is a pair of hefty six and one-half pliers with the long tapered jaws angled up a bit in order to slide the lower jaw which is slotted under the hand. The upper jaw has been equipped with an adjustable short punch to fit on to the center post end. Mr. Phelps says, "No more torn, scratched or marred dials. Slide lower jaw of plier under hands, adjust slide bar to center of post, a simple press on the handle and off comes the clock hands". We've used it, it does just what he says, and we like it. Direct from him, $6.75 plus postage.

Enclosed in his letter he sends a picture of the new Koepfer gear cutting machine he has recently installed, says it now equips him to cut almost any kind of gear or ratchet needed in the clock repair trade. He

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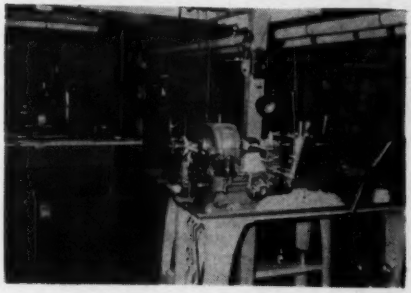
can also supply wheel blanks with the four spokes already blanked out in diameters from one inch to two and three-quarters inch. He is adding a special service for French carriage clocks, those with the platform cylinder escapement, and a hairspring vibrating service for the same type clock. A new catalog detailing such services and tools plus listings for special synchronous motors designed to substitute in the old Hammons type C and the non-alarm models of the McClintock clocks, in the printing. A copy will be mailed to any clockmaker writing direct for it—just tell him C. & O. told you.

* * *

George W. Olsen of the Hjalmar J. Olsen Company, 26 Templeton Parkway, Watertown, Massachusetts, fires in a splendid letter. In it he enclosed an even dozen candid snapshots of their new expanded shop. Naturally not one is a general view —each one depicts one section or one machine; the one we reproduce here shows the 10-inch hand screw machine, immediately behind it is the 10 inch quick change, back geared lathe. I quote a portion of



Olsen's Machine Shop

his letter: "We have put the staking tool aside for the moment, so we have expanded our shop and are concentrating on our regular line of keys, springs, etc. We are, however, still making the yoke anvil you mentioned in your November column.

"We are sending you our new catalog of keys and springs in which you will find our key size selector made of plastic material, showing the exact key size squares. It will enable the repairman to select the correct size by holding the selector on the old key or over the arbor, whether the

clock is in or out of the case. Anyone wishing one of these selectors has only to drop us a postal". This is the end of quote, but I add, tell him C. & O. said send the card.

* * *

Eugene Braunschweiger of Braunschweiger Brothers, 46 William Street, Newark 2, New Jersey, writes in a true cooperative spirit and it makes us want to quote his entire letter as follows:

Dear Mr. Coleman:

As avid readers of the American Horologist & Jewelers, we follow your column Clockwise & Otherwise with great interest. Cooperation seems to be the keyword and we are putting in our bit for what it might be worth. From reading your column, we know that you have a large cross-index file covering anything and everything with regard to clocks and we feel that we can make this file just a bit more complete.

We notice that when you get inquiries you always try to direct the party to the nearest source of help in his area. This brings us to the first point as to our connection with your file. We specialize in the repair of all types of clocks from Baby Bens to Grandfather clocks, both for the trade and private customers. We have a well equipped shop, including the Bergeon bushing tool, die set, etc., and a large stock of material. Our work is of the highest grade only.

As to recommending an inquirer to a firm of which you know nothing, we are not familiar with your policy, but a letter to L. H. Hayenga, president of the Watchmakers' Association of New Jersey will bear us out in our reputation and the type of work we do.

Second item: Kundo 400-day clock parts and Schatz *miniature* 400-day parts. We are an authorized Kundo service shop listed in their instruction booklet and as such carry a complete stock of parts. Although we do not make a full time business of it as does Charles Terwilliger, we will at any time be glad to furnish any Kundo parts, including bases and domes, at trade prices.

With regard to the Schatz miniature parts, you may be aware that Remington Rand does not import these, nor do they service them or carry parts. We, as a Kundo service shop, have as a result received for a repair a large percentage of other make 400-day clocks including these miniatures. Our volume was such that it was necessary for us to import and stock parts for them, and as with Kundo, we will be glad to help out in supplying these parts to the trade when needed.

Third: Cuckoo clock parts. We are also an authorized service shop for Emil Schmeckenbecher cuckoo clocks and here again carry a large stock of cuckoo parts. Many are interchangeable with other brands, but a sample part is always a help. We might make mention of one item which has been a headache to many repairmen. That is the replacement of the coil spring on the chain wheel that acts as the click which so frequently breaks. We are in a position to repair these or replace the entire wheel with one that fits. Again, we do not claim to be competition for someone like Ralph Herman, but if in some small way we can help out a fellow clock man, then that is our purpose.

To summarize, we will be glad to help out our profession in any way possible, even if it's only some information. Because we do a large volume of clock repairing, we keep a file similar to yours, on a much smaller scale, and it is invaluable for the solving of the many problems involved in clock repairing and obtaining parts.

Before closing, we would like to give you a little thumbnail sketch of our setup. We are located in downtown Newark in our own one-story building. There are five of us Braunschweigers. Eugene and Robert (brothers and owners) were both born in the Black Forest, Germany. This is the heart of the cuckoo and 400-day clock industry, so these clocks are nothing new to them. They came over in 1925 and have been in their own business since 1937.

That leaves Eugene, Jr., Herbert and William, who are Eugene's sons. Herb and Bill, by the way, are twins and both are c e r t i f i e d watchmakers. All three have been in the business since graduating high school some ten years ago.

Clock repairs resulting from being an authorized 400-day and cuckoo clock service shop have reached such a proportion that within a few weeks work will begin on enlarging our clock repair shop in the rear of our store. With the added room and other equipment planned, we will be able to boast of the finest clock repair shop in the area.

This brings us to a close. We realize you are a very busy man, but if you could find time to acknowledge with a few lines or comments, it would be very much appreciated.

E. BRAUNSCHWEIGER

P. S. You have an open invitation to visit us and our shop should you ever get into the Newark area, and if we should ever get to your neck of the woods we would like to drop in to get acquainted.

* * *

Friend Hamilton E. Pease sent us clippings from the Bristol Press covering the opening ofthe Bristol Clock Museum. Clipping is hardly the word here, for it covers much of the front page and three full pages over in the paper—photos galore—we clockmakers and clock lovers have become so accustomed to a small length squib about an inch or inch and one-half long if accompanied by a photo not over one column wide, that a spread of this caliber is a genuine thrill.

All of us are accustomed to getting that little leaflet enclosed with our phone bill

THE JEWELER WHO KNOWS

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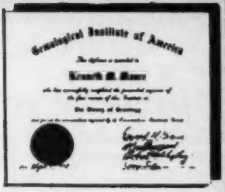

Today's modern jewelers and watchmakers know the value of professional training. That is why more and more watchmakers are adding to their Horological training by taking advantage of the *home study* courses offered by the Gemological Institute of America on the pay-as-you-learn basis. These courses are designed to offer you concise, factual information needed in diamond grading, appraising, merchandising, gem identification—and other important subjects.

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each month, but have you ever seen one that mentioned clocks? Pease sends along one from South New England Telephone Company (New Haven) entitled "Telephone News". The entire front cover page is devoted to the Bristol Clock Museum with about half taken up by a photo of the phone manager, Frank Little, presenting Edward Ingraham with the original drawing of the museum used by the phone company for the cut for the Bristol directory.

If some of our readers desire copies of the Bristol Press with those items, it is the Thursday, April 8th issue, price five cents.

We've always said that clocks and clockmakers receive far, far too little publicity —let's hope and pray that this may indicate the start of a new trend. No more inch long squibs buried in the back pages. That's all for this month, Jan and I will be right here again comes July.

J. & J.

CLOCKWISE

Dear Mr. Coleman:

I have received for a repair a S. Thomas shelf clock on which my customer would like an approximate dating. It is a 30-hour, hour and a half hour strike, spring wound, pinned pillar posts, pin count wheel, plate stamped "S. Thomas, Plymouth Hollow, Connecticut," has a plate shaped like the sketch I'm including with my letter, and has a wire gong in the case.

The case is approximately 14½" high, 9½" wide at the base, bottom glass panel in the door is decorated in black and gold leaf designs with a 10 point star in red and yellow points surrounded by a blue circle in the center.

I have put the movement in order, but am having difficulty with the strike. When it strikes the half hour it is short one count on the hour strike, and when adjusted to strike correctly on the hour, it skips the half hour. Is there any trick to setting up this particular strike mechanism? Please advise.

I am ordering "The Modern Clock" by Ward Goodrich, and am hoping this information might be contained therein. I enjoy your column very much, also those by Samelius and Anderson. Keep up the

wonderful work.

G. WALDRON BLAKE
R. F. D. No. 1
East Springfield, Pennsylvania

Dear Mr. Blake:

Seth Thomas built a good many models, both one and eight-day, on the lyre-type frame, and although various details of the striking mechanism were changed from time to time, basically all were essentially the same. All had the count wheel, and I'm sure that there is no trick involved in correctly adjusting any of them.

Many, if not most, of the little 30-hour (one-day) clocks did not strike the half hour at all, and from your description it would appear that somehow you are forcing a half hour strike. Since there are just enough strokes allowed for on the count wheel to strike the hours, one necessarily is subtracted if you force the clock to strike a stroke at the half hour point.

You can easily determine from the count wheel whether or not it provides for the half stroke—only 78 strokes are required to make the complete revolution of the count wheel or 12 hours. If you put in the halves, you add 12 single strokes—78 plus 12 equals 90; just count the count wheel.

We believe you will find the identical type, fully illustrated, on pages 302 and 303 of your new Goodrich book.

J. E. C.

Dear Mr. Coleman:

I have in my shop for repair an upright mantel clock about 30" high which has all wooden works (except for the escape wheel). Both the owner and myself would like to know how old it is. It has a date on it where it has been repaired 1863, but I will give you all the information I have.

Invented by Eli Terry, made and sold at Terrysville, Connecticut, by Eli Terry, Jr. Of course, this is a weight clock.

CHARLES F. PIERCE
117 West Mount Vernon Street
Somerset, Kentucky

Dear Mr. Pierce:

Eli Terry, Jr. was the second of nine children born to Eli Terry, Sr. (1799-1841). He is listed as building 6 arbor, 8-day wood clocks from 1834 to 1837 with labels very similar to the one you indicate. You do not state whether this clock is one or eight-day and the 30 inch height seems rather short for an 8-day.

Terry, Jr. was apprenticed to his father and was later with him in the firm of Eli Terry & Sons, and went into business for himself about 1825. If your clock is a one-day, it would fall between 1825 and 1834.

J. E. C.

Dear Mr. Coleman:

A few years ago in Munich, Germany, I purchased an old, interesting looking gold watch from an antique shop. I would like to sell the watch now and thought perhaps you could give me an idea of its value. A jeweler looked at it and suggested I send you the following information about the watch: Engraved on the inside back is "Eardley Norton, London, 172," the same is engraved on the plates, it is a key wind, key set, key adjustment with alarm, chain wind, and enclosed escapement.

The case is gold with the following engraved on the outside of the back: "Geschenk Alexanders 1, Kaisers von Russland an seinen damaligen Pagen den Cadetten Carl v. Witzleben am 23. November 1805." (Translation: "Gift of Alexander 1, Kaiser of Russia, to his page of that time, Cadet Carl von Witzleben, on November 23, 1805.")

ROBERT E. FUERST
87 Wellington Avenue
Rochester, New York

Dear Mr. Fuerst:

Eardley Norton, St. John Street, London, is listed 1762 to 1794 and is referred to as a maker of repute of watches and complex clocks. In 1771 he patented a striking mechanism for clocks and repeating watches. Examples of his work are to be found in many museums; there was a fine organ clock in the Palace museum at Peking, a clock in the National Museum at Stockholm, another in the Virginia Museum, a marine chronometer in the Ilbert collection, and there is an astronomical clock by him in Buckingham Palace.

An encyclopedia gives Alexander I as 1777 to 1825, and as per the engraving the presentation was made the 23rd of November, 1805. A piece made by Norton could have easily been used as a gift some eleven years after his death, however, the accuracy of the inscription would not hinge on that one fact.

J. E. C.

Dear Mr. Coleman:

I will appreciate your help on the following: a—I have a Grandfather clock in for repair with the stamping "James Hawthorne, Newcastle" on the movement. Can you tell me anything about the maker of this clock?

b—Where may I purchase the French self-centering closing hole punches that you mentioned in a recent issue? My nearest supply house does not carry them.

Here's hoping that some day you gather your fine department together in reference book form.

L. J. GREGORY

Box 158
Leucadia, California

Dear Mr. Gregory:

(a) Sorry, we do not locate a "James Hawthorne, Newcastle" in any of our listings. There is a John Hawthorn (note no e) listed at Newcastle-on-Tyne as producing timepieces around 1755; he died in 1779. Baillie's listing ends with the year 1825—it is possible that your James Hawthorne, being at the same address, could be a descendant of John, being active after the Baillie listing time. (b) Since your supply house does not stock the French type self-centering clock closing hole punches, have them write Milton Berman, B. Jadow, Inc., 860 Broadway, New York 3, N. Y., for prices and description. From these you can determine which you want and then they can order the set for you.

Possibly the most elaborate set is one put out by Bergeon (their reference No. 1728, page 11). This set contains 24 punches plus an anvil block and 4 heads in a well made wood cabinet. There are smaller sets of 6 and 8 punches in a wood box made specially to hold them.

J. E. C.

Dear Mr. Coleman:

I have read your column in the Ameri-

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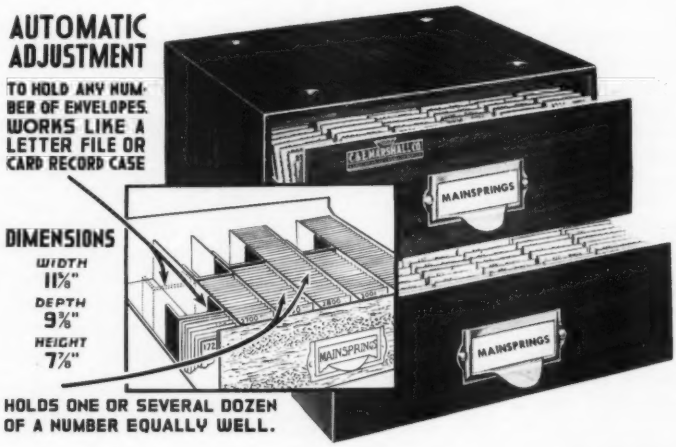

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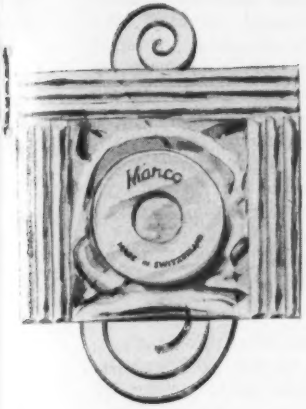

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can Horologist & Jeweler for many years and have enjoyed it very much. I have been placed on a committee by the Upper Alton Businessmen's Association to get prices and other information on a large clock to be placed in the upper Alton business section. We want a four-faced clock to be placed on a pole, it should be electrically operated and have Westminster chimes.

I was wondering if perhaps you would know the name and address of a firm or firms who could supply and perhaps install such a clock as I have described.

IRVIN H. MANEKE
1714 Washington Avenue
Alton, Illinois

Dear Mr. Maneke:

My very best wishes to your Businessmen's Association on their decision to erect a public clock. Clocks of this type (public) are not and have not, kept pace with the building program—many fine buildings, some with imposing towers, are going up with nary a sign of a clock on them.

Clocks of the type you indicate are not exactly a stock item; they have to be fabricated, at least in part, to meet your particular requirements. The closest address we have to you would be Cincinnati Bell Ringer and Tower Clock Company, 405 Pedretti Road, Cincinnati 5, Ohio. You might also address an inquiry to C. Rosen, Service Manager, Howard Clock Products, Inc. 256 Charles Street, Waltham, Massachusetts.

J. E. C.

Dear Mr. Coleman:

Since I am a follower of your articles in the A. H. & J., I am taking the liberty of asking you for some information. I have just purchased the publication "The Modern Clock," and on page 24 it is stated a thoroughly good and reliable timekeeper can be had for less than $100.00. Would you please tell me what it is, and where I can purchase it?

Is a commercial electric wall clock 12" or 15" size such as G. E., Telechron, etc., totally unworthy for a watchmaker to use as a standard of time? On page 421 this same book describes electric chimes which could be placed over the door, etc. of a jewelry store. Can you advise me where I can get such bells, what type of clock to use, and how to hook them up, etc?

I have just opened a small jewelry store, and am thoroughly familiar with watches, but my knowledge of clocks is very limited, however, I wish to change all that. I don't believe one can have a very complete jewelry store without a nice complement of clocks, and a thorough knowledge of same. Will appreciate any and all information you can give me.

ROBERT G. HAAG
Haag's Jewelry
962 Washington Avenue
Evansville, Indiana

Dear Mr. Haag:

You have an excellent volume there, one of real worth to the clock repairer today. We feel that you failed to note that it is a reprint, that the original printing was in 1905, thus the quotation you refer to on page 24 was spoken fifty years ago.

At that time, less than $100.00 would purchase you a splendid regulator, but today prices are a bit higher. Write J. R. Trott, Merchandise Manager, Seth Thomas Clocks, Division of General Time Corportation, Thomaston, Connecticut; we believe that they will supply on special order their seconds beat jeweler's regulator with jeweled pallets, etc.

Many watchmakers are using a commercial synchronous clock. To say they are totally unfit would simply be inviting an argument; personally I would not depend on one and one alone. I have three clocks, a Seth Thomas seconds pendulum, a Chelsea 80 beat and an electric. Along side these is installed a Wilcox communications receiver with special crystal tuned for WWV; they can be checked at will and are checked at least once per day. The electric is synchronous powered and therefore, of the same degree of accuracy as the ordinary commercial synchronous clock, but it has been modified with an additional or larger dial with special seconds track outside the hour circle.

The best piece of advertising you can possibly do for your new business would be to display to your customers and the public, a good looking regulator—a fact long since proven over many years by

jewelry stores and repair shops. I'd go without a clock (regulator) before I'd hang an ordinary electric above the bench for the simple reason that as John Q. Public passes and compares time on such a clock, he has only to walk down in the next block and note the same model (or brand, generally both) with patent medicine, tire or battery ad painted on the dial. He knows it's a "give away ad clock," and immediately establishes a "give-away" or "two-bit" thought in his mind about the repair bench where he has first compared the time—no good.

For an outside chime write Cincinnati Bell Ringer & Tower Clock Company, 405 Pedretti Road, Cincinnati 5, Ohio.

J. E. C.

Dear Mr. Coleman:

Recently I bought several old clocks from a long established jewelry store and some of them had been on the shelf in the back room since the twenties. One of these clocks is an 8-day striking pendulum clock with "Patd June 3, 1879. Wm. L. Gilbert Clock Company, Winsted, Connecticut, U.S.A." on the lower part of the front plate. On the upper left hand corner of the front plate near the arbor which would carry the fan fly is "Patd. Feb. 26, 1884."

I have a clock shop and have been repairing clocks for about thirteen years, but have never seen anything to regulate the speed of the striking train except the fan fly. Instead of the fan fly in this clock, there are two flat springs fastened to the arbor just past the pinion and extending parallel with the arbor into a shallow barrel fastened to the inside of the front plate. On the end of each of these springs is a lead weight shaped to fit the contour of the barrel. Each weight has a pad and as the arbor gains momentum these weights extend outwards until the pads come in contact with the wall of the barrel. This, of course, regulates the speed of the striking train and it does a very nice job of it.

I wrote the William L. Gilbert Clock Company, giving a description of it and had a nice letter from the service manager. Sorry I cannot read the signature, but here is what he said:

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RALPH HERMAN CLOCK HOUSE

628 Coney Island Ave.
Brooklyn 18, N. Y.

This will acknowledge your letter of April 10, and although the writer has been connected with Gilbert for some 35 years, I do not recall having seen a pendulum movement constructed such as the one you describe. All the 8-day pendulum movements manufactured between 1915 until they were discontinued around 1940 had the fan type construction which covered the speed of the strike.

It could be that the movement is a model which someone may have developed, but apparently it was never used to any great extent in production. Sorry that I cannot give you more definite information concerning it.

I would like to know if you or any of the other clock men have ever seen a clock like this or do I have the only one? I am sending you a very rough sketch.

C. S. DONAHOO

10 South 15th Street
Van Buren, Arkansas

Dear Mr. Donahoo:

We are quite familiar with the type construction you indicate for controlling the speed of the strike train, having noted one several years back and obtained a copy of the patent. That patent is No. 294,262, issued to George B. Owen, county of Litchfield and state of Connecticut (Winstead), and was filed April 24, 1883 and granted February 26, 1884. It was witnessed by Frank D. Hallet and Henry B. Able; there was no model and no assignment.

It is indeed difficult for one to say definitely how many of Gilbert's clocks made use of Mr. Owen's "Improvement in speed regulation for the strike mechanism." I think I'd be perfectly safe in saying that I've averaged seeing better than one per year over a period of years, know the location of two right here in town and have one on the repair bench right now (a third). They most certainly went far beyond the model stage. You may obtain a copy of this patent from the U. S. Patent Office for 25c by noting the serial number and date above.

Your question is so truly a case in point that I'm tempted to digress for a moment —might even call your attention to the Otherwise column in the April issue. I believe that your letter must have come from S. A. Ransom—he has been Gilbert's service manager for a number of years. We've always found both him and the Gilbert organization very cooperative. Despite their sincere desire to cooperate, there are many, many points, types of construction, dates, etc., which the factories simply do not have any record of, and therefore, cannot supply.

It is this type data your Clockwise and Otherwise is endeavoring to gather and file. We are entering on a new era in clocks and clock repairing—repairers want such data either for themselves or to pass on to their customers more than ever. This also shows up very clearly why we have to lean so heavily on our readers for information and data.

J. E. C.

Dear Mr. Coleman:

Would you be able to give me any information on a watch made by the U. S. Watch Company, Waltham, Massachusetts, work #91819? The inside back is inscribed "Warranted coin silver 1099," a number on the rim of the case is "660." and the front and back are finely engraved. It's an old watch and I would like to know if you can give me any information as to its age and value.

I have written the Waltham Watch Company, who took over the U. S. Watch Company a number of years ago, but they do not have any record of such watches. I was referred to you by a watchmaker here.

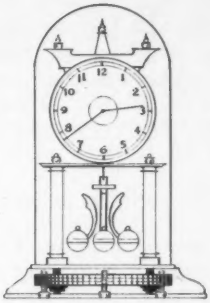
AL MARTIN

5511 Kenmore Avenue, Apt. 306
Chicago, Illinois

Dear Mr. Martin:

The United States Watch Company of Waltham, Massachusetts, was organized in 1884 as a part of the Waltham Watch & Tool Company by Charles V. Woerd, superintendent of the Waltham Watch Company. The venture failed, the plant was purchased by the Keystone Watch Case Company which made the Howard watch until 1927.

We know of no record listing by serial numbers the movements made by this company, since Waltham does not have any record themselves we assume that none exists. From the listing of Waltham serial numbers we see that they had already reached 178,200 by 1865. Since the U. S. Watch Company was not formed before



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1884 it is clear that there can be no relation whatsoever between their numbering and that of Waltham.

Between the years 1886 and 1891, Charles S. Crossman wrote a series of articles under the title "A Complete History of Watch and Clockmaking in America"—we quote from the chapter dealing with the U. S. Watch Company and caution that you remember when it was written: "In the summer of 1882 Charles V. Woerd severed his connection with the Waltham factory of which he was superintendent and joined himself to the Nutting Brothers, and a new firm was organized under the name of the Waltham Watch Tool Company with Mr. Woerd as general manager and superintendent.

"The new firm pushed forward in the manufacture of tools, making a specialty of Mr. Woerd's patented automatic machinery, (a personal paragraph) Mr. Woerd, however, soon conceived the idea of enlarging the plant to the proportions of a watch factory, as his partners were agreeable to it, work was commenced on the necessary tools and machinery. A capitalist was found in the person of E. C. Hammer of Boston who is at present Danish consul. An organized company was the result in 1884 which was called the United States Watch Company of Waltham with a capital of $50,000.00.

"T. E. Eaton, a businessman of Boston but a resident of Waltham, also became a stockholder and was elected president. Mr. Hammer was treasurer and E. C. Edgecomb, a son-in-law of Mr. Woerd, was made clerk. The company immediately purchased a block of ground in the northwestern part of the city and erected a brick building, 25 by 100 feet, three stories and basement. It is really a very nice, snug little factory and well equipped."

There follows considerable descriptive matter on the three grades of movements designed by Mr. Woerd, etc., the pertinent points being that it was 16-size, had a fork made of aluminum-bronze, a square ruby pin, and required a special case. I quote further: ". . . required a special case which, of course, made it unpopular with the retail trade and it was dropped or, in other words, died its natural death in November 1887 at which time Mr. Woerd severed his connections with the company.

"Some 3000 of a low grade had been finished which were subsequently closed out. Upwards of $200,000.00 had been spent in the enterprise, but the results were far from gratifying. Granville Nutting succeeded Mr. Woerd as superintendent and A. M. Saul came from Springfield, Massachusetts to take the position of mas-

ter watchmaker. A new model for a 16-size movement fitting Elgin cases was designed and work vigorously commenced on it at once.

"Should the performance of these watches prove to be as good in actual use as the workmanship of those we examined would indicate, we predict a very successful future for this young, but hitherto unsuccessful company. They will also put an 18-size movement on the market soon. The factory will have a capacity of 50 watches per day when fully equipped. The operators number 70 at present, the officers remain the same. The capital is incorporated at $150,000.00".

If we take Mr. Crossman's fifty watches per day, and if we assume that the numbering began with number one on the new series in 1888, then they would have been producing some 18,000 watches per year and it would have required five years to reach 90,000. On this assumption your number 91,819 should have come up sometime during 1894.

J. E. C.

Dear Mr. Coleman:

The Ralph Herman Clock House in Brooklyn, New York, has referred me to you as a source of information in regard to chime clocks. I am helping a jeweler friend of mine and he has a German chime clock for repairs. It has, to our knowledge, been tampered with, in fact, some of the parts were lying in the bottom of the clock case and they don't all belong to this clock.

This clock has an 8-hammer chime and the chimes work off a drum to the right of the movement, in other words, we cannot connect the chime to chime at the proper time and would like to know what information we can get from you. I am sending you a sketch of the markings. Please advise me as to some of the books you can supply on this subject.

JOHN A. MACEY

1223 First Avenue
Hellertown, Pennsylvania

Dear Mr. Macey:

Your clock was made by Mauthe-Uhrenk K-G, Schwenningen, Neckar, Germany, and we've made a diligent search but do not locate a U. S. importer for this firm. This is in the western zone, and if necessary you can write them direct.

As a suggestion, we mention Braunchweiger Bros., 46 William Street, Newark 2, New Jersey, as a trade shop in position to complete this job for you. There are five of them—two brothers and the three sons of one of the brothers, all trained horologists.

We know of no particular volume that would deal specifically with German chime clocks or one devoted solely to chiming clocks for that matter. As you've already learned, clock books, repairing that is, are scarce. "The Modern Clock" by Ward L. Goodrich, "Practical Clock Repairing" by Donald de Carle, and "Horology" by J. Eric Haswell, all contain excellent chapters on the general construction and fundamentals of the chiming train. All these books are available from the A. H. & J. Book Department.

J. E. C.

Dear Mr. Coleman:

I have an old clock with the front 16x10, cast-iron, two figures, one on each side, holding bibles in their hands. The clock was made by Terhune & Edwards, 98 Courtland Street, New York.

The mainwheel (time) is worn out, and I am wondering if the clock has enough antique value to warrant trying to repair. It looks like a regular St. Thomas or New Haven movement, and I would appreciate it if you could tell me the approximate age of this clock.

WERNER S. NELSON

Twin Lakes, Georgia

Dear Mr. Nelson:

It was first Terhune & Edwards at 50 Courtland Street, then Terhune & Edwards at 48 Courtland Street about 1860. 18 Courtland Street according to an 1872 directory. They were either case-makers or merchants, most likely both, and are known to have used Chauncey Jerome movements in a lot of their clocks.

Now as to antique value—this we never comment on, at least not in dollar figures. Practically all American clocks made before 1900 are in demand to one degree or another, and there are some special demands for iron front clocks as a type, etc.

J. E. C.

THE WATCH REPAIRMAN AND THE OSCILLOSCOPE

By Carl H. Anderson

WE BELIEVE it fitting to give a short explanation about this month's article as it is not what we had intended it to be. We had expected to be able to clean and finish up the first of our experimental watches, also to publish oscillograms showing the results. We regret very much we have been unable to do this. Quite unexpectedly we were called out of town for a consultation. The trip there and back, together with the time spent in the factory, consumed the major portion of nine days. You can readily understand from this we did not have the necessary time to complete all we had mapped out for the month. We are now back on the job and confidently expect to have a full report on the first watch for the July issue.

The latter part of April we threw the oscilloscope and the timing machine to which we usually keep the oscilloscope connected, into the car and together with Mrs. Anderson we were off to Chelsea, Mass. (a part of Boston), at the invitation of Mr. Walter E. Mutz, Treasurer and General Manager of the Chelsea Clock Company.

We left home late Saturday afternoon and arrived in Chelsea Tuesday noon. We are very sorry time did not permit us to stop enroute and chat a few minutes with many of you readers who have written us. As we drove through several cities we recognized many of your names on the windows and store fronts.

In all of our various trips around the country and all of the factories we have visited, we have never seen a better one than that of the Chelsea Clock Company. Those of you who have ever worked on a Chelsea Clock know that it is the finest clock of its kind in the world. We understand it is the official clock of the U. S. Navy and every one of the Navy's ships (of all types) has Chelsea Clocks as standard equipment, some of the larger battlewagons having more than 100 each. Those of you who have been in the Navy have seen thousands of Chelsea Clocks.

Here is a clock which is in reality a large watch. The only thing about it which even remotely resembles a clock is the size. All pinions are milled out of solid steel, hardened, tempered and polished in exactly the same manner as is done in watch manufacture. The wheels are likewise milled out of hard brass and highly polished. The escapements used are standard 16 size and 12 size ones, the same as are used in pocket watches of these respective sizes. These escapements are made complete with their own plates and are inserted in the clock as a complete unit, called "platforms". Most of them are of the 11 jewel variety, seven of the jewels being placed in the same position as is usually done in a 7 jewel watch, upper and lower balance cap jewels, upper and lower balance hole jewels, roller jewel, and two ruby pallet stones. To make up the other four jewels for a total of eleven, train jewels are placed on both the top and bottom ends of the pallet arbor and the escape wheel pinion. The escapement is set up and adjusted in exactly the same manner as is done in a watch.

Most of the clock cases are of highly polished statuary bronze or yellow brass, real works of art. They are made in both striking and non-striking models. The striking models are of the conventional twelve-hour strike, this being only a very small percentage of the production, and Ships Bell Code striking which comprises

Mr. Anderson will be glad to answer any question pertaining to the Oscilloscope. Queries should be sent to him in care of the American Horologist & Jeweler, with a stamped return envelope enclosed.

by far the greatest percentage of the total. Some of the models are cased with handles around the periphery of the case, resembling the wheel in the pilot house.

For those who do not understand the Ship's Bell Code, we quote the following from the Chelsea Catalog:

Telling time by Ship's Bell Code has a romantic background, having been used on shipboard the world over for hundreds of years. As the staccato notes of the Ship's Bell ring out, they tell the exact time. On land, too, it is popular and prized for its convenience as well as for its charm. Here is the Ship's Bell Code:

8 bells	4:00	8:00	12:00
1 bell	4:30	8:30	12:30
2 bells	5:00	9:00	1:00
3 bells	5:30	9:30	1:30
4 bells	6:00	10:00	2:00
5 bells	6:30	10:30	2:30
6 bells	7:00	11:00	3:00
7 bells	7:30	11:30	3:30

The hours are even numbers and the half hours are odd numbers.

From the foregoing it is readily seen there are eight bells in a period of four hours, there being a bell every half hour.

We sincerely hope our good friend Jess Coleman won't think we have encroached upon his "Clockwise and Otherwise" by writing about our trip to Chelsea.

We were invited down to the Chelsea plant to aid them in setting up their first oscilloscope. They have found the oscilloscope to be an indispensable instrument in the production of a really fine clock. They, like all others, have found they can tell things with the oscilloscope that can be done by no other method. The first oscilloscope will be used in doing research work, and ultimately oscilloscopes will be set up on the production, assembly, testing and timing lines.

It was our job to acquaint them with many of the things we have worked out on the oscilloscope and how they are applicable to their clocks. We had almost four days of continuous, uninterrupted conferences. It was a darned good thing we have some technical and engineering as well as practical knowledge, because the questions they shot at us really kept us on our toes. We set up a large black board which was used fully as much in making drawings and diagrams as we talked. We would make a diagram, then point out where that particular action took place in the oscilloscope trace. In all our experience we have never seen a more genuinely interested or enthusiastic group of fellows.

The thing which amazed us most was that here was a group of men who were already producing the finest clock of its kind in the world who were honestly and sincerely interested in finding out if it was possible in any way whatsoever to improve their product. We learned a great many things ourselves and are truly glad we had the opportunity to make the trip, likewise to have been in conferences with such a wonderful group of men. We conceived many new ideas about the use of the oscilloscope, many of which will be given to you readers in forthcoming articles.

Here is a company where every man holding any position of importance has come up through the ranks. Mr. Walter E. Mutz, Treasurer and General Manager, worked his way up to Plant Superintendent, and when some of the older executives retired he advanced to his present position. Having been a practical production man himself, quality not quantity is closest to his heart. Upon him rests the entire responsibility for everything. Under Mr. Mutz' capable guidance, Chelsea Clock has attained the enviable position it holds today. Mr. A. J. (Jimmy) Leone who started in as a draftsman (as I recall it), later became Assistant Plant Superintendent under Mr. Mutz, and is now Plant Superintendent. He is one of those fellows who is "all over the place" and knows everything that is going on. He sure has his finger on the situation. His is the responsibility for the smooth running of the entire factory. Mr. Eugene (Gene) Lassieur, Chief Engineer, came to America from Switzerland. He is a graduate of the Technicum at Le Sentier, Switzerland. Some of you young watch repairmen who went to school five hours a day, five days a week for a total of 1,000 hours or so, should have gone through Gene's training. He went to school eight hours a day, six days a week, fifty-two weeks a year for seven years. Figure that up and see how many hours he attended watchmaking school; we make it 17,472 hours.

Gene is one of the very few men in America who, while in school, actually and

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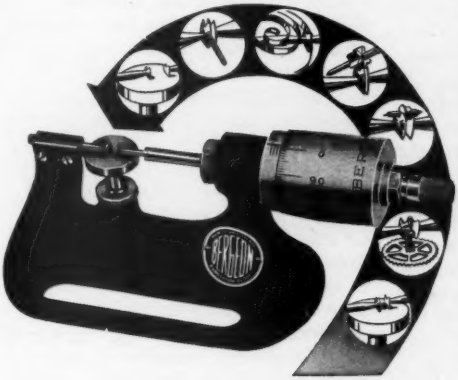

The Bergeon Universal micrometer is a measuring tool designed especially for use by the watchmaker. The design of the jaws is unique inasmuch as they can be used to gauge most any watch part, such as teeth of the pinion, different heights on the staff, etc., as well as the regular items commonly gauged. The adjustable platform rises flush to the jaws and is very convenient for gauging delicate parts which have a tendency to fly off the tip of the tweezer. The range of the micrometer is in 1/100 of a millimeter from 0 to 25 m/m. Complete in a beautiful sturdy felt-lined case which is the perfect setting for an instrument of this type.

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completely made watches by hand and succeeded in getting them passed by "The Bureaux Officiels de Controle de la Marche des Montres", which in Switzerland corresponds to our National Bureau of Standards. His watches were of such accuracy that they were awarded Official Bulletins of the Bureaux. We wish we had Gene's knowledge of Horology. Our hats are off to him.

Then there is Howard R. (Stoney) Stonehouse, Foreman-Escapement, who in his line is just as capable as the others are in theirs. Last but not least was John T. Starr, Assistant Foreman-Finishing. John is another of those who know their business and does his part in making Chelsea Clocks what they are. While we were in conferences, Mr. John Mulloy, Production Manager, took Mrs. Anderson on a personally conducted tour of the historic spots in and around Boston, of which there are hundreds.

How would you like to spend almost four full days in conference with such a group of men? We feel we were highly honored by being asked to sit in with these men and be able to put in "our 2c worth". Never have we been anywhere where the "esprit de corps" equalled what we saw in Chelsea. No petty jealousies, no back-biting, everyone working hand in glove to make a better product. (Most of we watch repairers could take a lesson from them. If we would bury some of our petty jealousies and work together, we would have some Guilds that would really mean something and would actually accomplish things.) We had some highly technical, engineering, design and production discussions whereby all benefited. Just remember this, whenever you have a customer who wants to buy a present for a friend, retirement gift or something for an unusual occasion, nothing can beat a Chelsea Clock. We wish to thank them all, and particularly Mr. Mutz for showing both of us such a grand time. Of course we had some wonderful "Down East Yankee" meals through Mr. Mutz' courtesy.

* * *

Quite naturally this trip threw us behind

in our correspondence as well as our research work. So now, we are burning the midnight oil trying to catch up.

We are hard at work on some new drawings, which will be published along with our charts just as rapidly as possible. One of the charts shows just where and which way to bend a hairspring to make it isochronous, together with the necessary instructions. We are also making the drawings to accompany our instructions on how to restaff a watch without putting the balance wheel in the truing calipers or on the poising tool. We will tell you now though that some of you aren't going to like this one so well, or at least, not at first, because you will have to take that balance staff remover you have been using in your staking tool and throw it in the waste basket. Don't kid yourself, this operation can not be done if you use a balance staff remover, *you must cut the staff out.* If you aren't willing to cut the staff out then you will have to continue truing and poising your balance wheels as you are now doing, and wasting a lot of very valuable time to say nothing of the trials of your patience.

But, let us tell you one thing, we will draw the temper in the staff, chuck it up in the lathe, cut the staff out, stake in the new one, test it for trueness in the round and flat as well as poise, and do all this in less time (and do a better job) than you are now doing using a staff remover, to say nothing of the savings in time in truing and poising as well as not cracking the arm of monometallic balances. You should know that every time you bend a balance wheel or a hair spring, you disturb and rearrange the molecules. This isn't good for either the balance wheel or the hair spring. The less you bend either of them, the better time your watch will keep and the easier it will be to bring it to time. We will tell you all the whys and wherefores in our article.

* * *

For those of you who now have an oscilloscope, here is one that should interest you very much. We have just worked out a way to move the marker signal and make the timing machine print from either the sound of the roller jewel striking the fork slot at entry or the sound of the lever striking the banking pin *without changing any of the adjustments on either the timing machine or the oscilloscope.* Heretofore it was necessary to change the volume control on the timing machine to move the marker signal from one sound to another. By changing the volume control you either increased or reduced all of the escapement action sounds by a like amount. This new method of not changing any of the controls, the sounds do not change amplitude regardless of which one of them you use to fire the thyratron tube.

Since a very large number of readers do not at present own an oscilloscope, the instructions on this will not be published at this time. But, those of you who do have and are using an oscilloscope, if you will write us a short note giving the make, model and serial number of your oscilloscope as well as the same information about your timing machine, together with a self-addressed, 3c stamped, return envelope, we will mail you all necessary instructions, no charge. Read that last sentence again and do exactly what it says or the instructions will not be mailed. We must have this information as the instructions are different for each different combination of timing machine and oscilloscope. The parts necessary to do this will not cost you over $2.50. You will not need a radio repairman to do any work for you as you can easily do it yourself.

* * *

Did you ever notice the ring cut into the flat surface of an Incabloc cap jewel? Do you know why these jewels have this ring while others do not? This ring acts as an oil retainer and prevents the oil from spreading all over the cap jewel. We believe the best way to oil Incabloc jewels is to apply the oil directly in the hole of the hole jewel from the convex or curved side and not from the oil sink side. Then place a good drop of oil on the cap jewel. Make sure the oil "stands up" and it should be large enough to almost reach the oil-retaining ring. The way we do is to lay the cap jewel on our bench plate with the oil ring side up, then oil the cap jewel and the hole jewel.

Instead of picking up the cap jewel and

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placing it on top of the hole jewel, we pick up the hole jewel in our tweezers, turn it over, and very carefully drop the hole jewel down over the cap jewel. If both jewels have been properly oiled you can see the oil come together from the cap jewel and the hole jewel. We then pick up the assembled jewels and drop them into place and replace the holding spring. You need not worry about the cap jewel dropping off the hole jewel when you turn them over as the oil ring will hold the two of them together.

Notice particularly in almost all watches equipped with Incabloc jewels that one of the cap jewels is much thicker than the other one. The thick one goes at the top of the balance in the balance cock and the thin one on the bottom pivot in the pillar plate. The reason the lower jewel is the thinner of the two is because there is usually much less space between the bottom side of the pillar plate and the underside of the dial than there is between the top of the cock plate and the inside back of the case. Of course both the upper and lower Incabloc jewel assemblies must have room to jump up and down when the watch is bumped. If you make a mistake and put the thick cap jewel on the bottom of the balance staff, you may find you have a stopper and you might look a long time for it without much success. We have never seen a case of where there was any difference between the upper and lower Incabloc hole jewels except where the watch had been repaired and someone had put in a new jewel with the incorrect size pivot hole. The thick and thin cap jewels are used in other types of shock resistant jeweling, and the same applies in putting the thin jewel on the bottom end of the balance staff.

* * *

We have been trying out several different kinds of peg wood and now have a recommendation to make. The small, hard, French peg wood may be obtained from Burton M. Reid Sons of Springfield, Ill. It comes in three sizes, 2 m/m, 2½ and 3 m/m in diameter. They were kind enough to send us a sample bunch of each size which we have given a thorough tryout. The 3 m/m size is about the same

in diameter as the peg wood usually used on watches. If you are careful of your use of the 2 m/m peg wood it will not break off in very small jewel holes. If it does break off in the jewel hole, it is a neat little job to get the broken-off piece out of the jewel hole without damaging the jewel. We have taken an ordinary sewing needle and ground it down in our lathe with a hard Arkansas Oil Stone slip until it has a very fine point with a very long taper, possibly 1-inch long. When the peg wood breaks off in the jewel hole, we very carefully insert the fine point of the ground down needle into the jewel hole and gently push, rotating the needle at the same time. After a few thrusts the broken-off piece usually comes out. We have found the 2½ m/m size does not break off quite so easily and therefore many of you may prefer to use this size. We do not have the correct price on this peg wood, but believe it to be 35c a bundle.

* * *

Unfortunately we are a little behind in answering our correspondence. When you receive 50, 60 or 75 letters in a single mail, it does take a little time to answer them all. Some of the letters got out of chronological order, but we have remedied that and in the future all letters will be answered in the order received. We are receiving so much mail that we will have to adopt the practice of not answering any letters unless they enclose a self-addressed, stamped, return envelope. Please remember this if you wish a personal reply, otherwise your letter and the reply thereto will be published in these columns as quickly as possible. We sincerely appreciate all the letters because many of you have asked very good questions which gives us the opportunity to publish a reply that should be of interest to a large number of readers.

It takes quite some time for foreign mail to some in, but up to now we have received leters about our Oil Failure articles from England, France, Germany, Switzerland, Norway, India, Australia, Canal Zone and Venezuela.

We would like to make one thing clear to all of you. We do not receive compensation of any type from anyone whomsoever for the research work we have done in the past or are doing at the present time. All research work was undertaken strictly to improve our own knowledge and ability. The only financial return we have ever had is from the fees we receive from consultation work, of which we have done quite a great deal.

We do have a tremendous amount of research information which would be of interest only to manufacturers as the repairman at the bench would never be faced with these problems. For example, as a repairman, you are not interested in whether or not the watch has too heavy a balance wheel assembly. That is the manufacturer's problem. You receive the watch with the hairspring vibrated for the weight balance used in the watch. You are not interested in whether or not the watch would be a better timekeper if it were fitted with a lighter or heavier balance, or whether or not the pivots should be larger or smaller. These are problems strictly for the factory Design Engineer. However, all of these problems and hundreds of others met with in design and manufacture of watches are almost instantly solved by the use of the oscilloscope. We will try to keep the information contained in these articles confined strictly to problems met with by the repairman at the bench.

* * *

We do not want to preach a sermon but it is so vividly clear from our correspondence of the need for closer cooperation between watch repairmen that we can not too strongly recommend everyone of you being active members in some Guild. If there isn't a Guild in your community, then by all means see that one is formed. All of us need to forget our little petty jealousies and work together. That is the only way we are going to solve some of our difficulties. If every one of us feels it is the other fellow's business to correct things which need attention, then it will never be done.

A Guild is not a one-man proposition either in its formation or keeping it going. Everyone must put their shoulder to the wheel and assume their respective share of the burden. It isn't, "What can

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I get out of a Guild?" Rather it is "What can I put into a Guild?" We could name you a score of things which need attention and would be quickly corrected if it were made perfectly clear there was force and authority behind it. We have mentioned mechanical faults in watches. Our just mentioning it in these columns will never accomplish anything. Suppose, on the other hand, 20,000 or more watch repairmen spoke as a group. Do you think this would command attention? It most certainly would.

We can tell a customer we do not recommend a certain make or model of watch, but we are only one. Just because we do not sell a certain watch doesn't mean that it won't be sold elsewhere. What do you think would happen if 20,000 watch repairmen and jewelers said, "We are not going to sell this watch until it is mechanically correct." Wow!!! Something would happen fast.

To analyze the situation, we have two National Jewelers Associations and three National Watchmakers Associations. You tell us why the Jewelers need two and the Watchmakers three associations? No one of the five is strong enough to speak out and make itself heard. We know there are many things which stand in the way of unification or harmony. But just so long as we have disunity or no organization at all, just that long there will be chaos. If there is anything under the sun we can do to bring about some kind of an organization of watch repairmen which will take positive stands on various things, then pitch in and see these things corrected, we most certainly will go at it 100% wholeheartedly. Fellows, we are never going to get anywhere as long as we go along in the future as we have in the past. We need a *strong* man. Personally we do not have too much regard for John L. Lewis, but we do have to admire him for what he has accomplished for the coal miners. He is a real power and the coal companies haven't licked him one single time. If there is a Lewis amongst us, let him come forward and assume command. We will back and help him to the limit. Talk won't accomplish one single thing, *it takes action.* Is now the time?

* * *

When you fit a new mainspring or over-

haul a watch, just how much attention do you devote to this part of the watch? Do you think the mainspring is important? Should it fit in the barrel properly? Should it be of a certain strength? If it is even partially set should it be put back in the watch?

We have learned from sad experience that the mainspring is one of the most important parts of a watch. We exercise great care in fitting a new one or replacing a set one. How can you expect a set mainspring to deliver the right power down through the train to the escapement? When cleaning watches we have removed many mainsprings from the barrel which were so badly set they did not open up as large as a dime. Could such a mainspring possibly make a watch run to say nothing about keeping correct time? We absolutely replace every mainspring which shows even slight signs of being set. Why? Very simple. The watch can not possibly get the correct power to make it run right and keep good time. Then another thing. If you count just the time to examine and take in a come-back, can you possibly do it for 25c worth of time? This doesn't include the taking the watch apart, reassembly, timing and the time consumed in delivery and explanations to the customer. To replace a mainspring will average about 25c for the cost of the spring. So we say, if there is any doubt whatsoever, replace it and thereby remove one more cause of come-backs.

Then what about customer dissatisfaction? Do you think a customer wants to bring a watch back because it stops or doesn't keep correct time? Certainly not. We would say we replace 6 or 7 mainsprings out of every 10 watches we overhaul.

Replacing a mainspring isn't just the simple job some repairers think it to be. The spring must be of the right width, right length and right strength. These sizes are readily obtainable from published tables, which we are sure you have. However you will find quite a discrepancy in various tables as to the sizes. Shortly we will write an article on this, quoting the measurements given in different tables. We can point out some watches where every table gives a dimension different from others. If you want to make sure as to the width of a mainspring, measure the height of the inside of the barrel from the bottom up to the ridge where the cap snaps in. Let us say this is 2.5 m/m. Deduct 1/10 m/m for clearance, and you will have left 2.4 m/m as the correct width of the mainspring. The strength can easily be determined from the balance motion, assuming the watch to be in good mechanical condition otherwise.

If the watch rebanks, the mainspring is too strong; if the total balance arc is less than a turn-and-a-quarter, the mainspring is too weak. The length of the mainspring is quite important, but it is easily determined. Remove the balance and the lever from the watch. Hold the escape wheel with a piece of peg wood and completely wind the watch having beforehand set the hands at exactly twelve o'clock. Now release the escape wheel and see how many hours it runs. The hour hand should make not less than three complete revolutions, which is 36 hours. If the test shows the watch to run 36 hours or more, the length is O. K., although it may not be exactly the same as your mainspring measurement chart may indicate.

Another thing to notice is, how much space the mainspring occupies in the barrel. The correct theory is that the barrel arbor and the mainspring should each occupy one-third the area of the barrel and the other one-third should be open space. Notice we said *area,* not *diameter* or radius. The radius being shorter at the center it requires a greater radius to occupy the same area at the center of the barrel than it does at the outside edge. Another way is to scribe inside the barrel, what is called the "up and down circle." With a very fine-pointed graver, lightly scratch a circle inside the barrel on the bottom where the mainspring rests when the power is completely let off. Now wind the mainspring full up, the outside of the mainspring at the full up position should be exactly on the circle you made when the mainspring was let down. If your mainspring is too long, it fills too much space inside the barrel, therefore the barrel can not make a sufficient number of turns

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when the watch runs down. If the mainspring is too short the barrel will not make a sufficient number of turns when the watch runs down because the mainspring wasn't long enough to turn the barrel that far.

The mainspring must be of the correct length. In a 5½ or a 6¾ ligne watch, ½-inch difference either way in the length of the mainspring will result in the watch not running long enough from a complete wind. In a 10½ ligne watch, ½-inch either way in length of the mainspring isn't of too great importance. In an 11½ ligne watch, it can be a full inch either way and not seriously impair the timekeeping of the watch.

There are several other things about fitting a mainspring that are just as important as its dimensions. The tongue on the outside end must not be too long or too short. If it is too long, it pushes too much of the mainspring away from the side of the barrel. If it is too short, when almost fully wound the tongue will pull out of the groove in the side of the barrel. Above all else, the free end of the tongue should be beveled. The long side of the bevel should be on the top or outside of the tongue and the short side of the bevel on the inside of the tongue or next to the body of the mainspring. Or if you understand it better, the bevel should be on the underside of the tongue, next to the body of the mainspring. Properly beveling the end of the tongue causes it to bite into the side of the barrel and firmly set itself therein so it does not pull out.

The inside of the mainspring must hug the barrel arbor just as closely as possible for at least three-fourths of the arbor circumference. This not only keeps the end of the spring from pulling off the hook on the arbor, but it results in much more even torque being delivered to the train. If the mainspring is fitted with a brace so much the better. The brace should be so curved or shaped (before inserting the mainspring in the barrel) that it holds the mainspring tightly against the inside of the barrel for at least half of the circumference of the barrel. Have you noticed some of the new tongue-end Swiss mainsprings are coming through with the tongue riveted several millimeters from the outside end of the mainspring? This is to make a brace out of the outside end to hold the mainspring tightly against the inside of the barrel.

Some workmen do not believe fitting a mainspring to be of any major importance, but they are wrong because it is most important. You can save yourself a lot of trouble in come-backs as well as final adjusting by properly fitting your mainsprings.

* * *

We are publishing herewith the first of the charts which we have formerly mentioned. Before trying to use or understand this chart it is most highly recommended

ADJUSTING

Partly Original, but Mostly Accumulated by Carl H. Anderson

FIRST: Make DPS same. Flat pivot is + compared to round—. Always flatten — pivot. Compare DPS to PU. If more than small difference, check pivots carefully and jewels.

TO CHANGE PPS ONLY: At PU level hspg to 10 seconds or less. If PU— lift up to + to + rate.

TO CHANGE PPS ONLY: At PU level hspg to 10 seconds or less. If PU— lift up to + rate, down to — rate.

High stud is +, low —. Hspg high is +, low is —.

PPS— compared to PU, push reg pins away from staff. If + to staff.

PR+ and PL— compared to PU, stop balance on dead center, manipulate body of hspg, coils are closer together on + side.

PU+8, PR+3 and PL—3, outside reg pin to stud. Shift one reg pin to or from stud to equalize PR and PL.

Pushing in 20° from collet on hspg makes PU— and PD+.

TO EQUALIZE DPS and PPS: If PPS are slower than DPS, close reg. pins, check fit of RJ, fit of PA and total lock.

TO CHANGE ALL RATES: Reg. pins to stud is —, away is +, to staff is —, away is +. Close reg pins to make +, but makes PPS faster than DPS.

Closing R banking pin makes rate + on CCW hspg. Close opposite banking pin on CW hspg.

ALL RATES ALIKE: If DU or DD is 2 line record, if + push in on overcoil, if — push out on overcoil.

ISOCHRONAL ERROR: To + short arcs, adjust overcoil to center, to — short arcs, adjust overcoil from center.

BEAT: Move collet in direction pulls most (be sure power is completely off).

FINISHING: If out of beat, move collet CCW if —, CW if +.

POISE: (To correct PPS, especially difference between PR and PL.) Overweight at bottom when long arcs are — (over 440°), short arcs + (under 440°). Overweight at top when long arcs are + (over 440°), short arcs — (under 440°). (PL+ and PR—, overweight between 4 and 5 o'clock on dial.)

TEMPERATURE: If heat is + and cold—, move screws away from cut; Heat — and cold +, screws to cut.

JEWELS: Lower balance jewel thick is DU+ and DD—. Thin jewel is — and thick is +. Small RJ is —, (too much shake in fork slot).

OUT OF BEAT CAUSES:

Roller jewel not in line.
Total lock too heavy on one side.
Hspg rests heavy on one reg pin.
Loose balance pivot fit.
Loose pallet arbor.
Loose roller jewel.
Loose pallet stones.
Loose regulator pins.
Loose banking pins.
Loose screws.

DPS-Dial Positions; DU-Dial Up, DD-Dial Down PPS-Pendant Positions; PU-Pendant Up, PD-Pendant Down, PR-Pendant Right, PL-Pendant Left CCW-Counter Clockwise, CW-Clockwise — Slow Rate, + Fast Rate.

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that you secure a copy of James Hamilton's book, "Timing Manipulations" which we mentioned last month. If you didn't get one, better order it right now from the book department of A. H. & J. The price is $3.00 plus 8c postage. You will find everything completely explained in this book. As we said before it is written in simple, clear language that any watch repairman can understand and use.

Our chart has been simplified just as much as we feel possible, therefore it is short, but complete. It covers position adjusting, temperature adjusting, isochronal adjusting, beat, poise, dynamic poise, fit of jewels, etc. It is all there, but abbreviated and brought down to the simplest possible statement. For example, if you do one thing to + the rate, you would do the opposite to — the rate. The abbreviations are all standard and are such as are used by all factories and most all watch repairmen. If you have any knowledge whatsoever of adjusting, you will have no difficulty in understanding how to use it.

Of course the chart isn't of much value unless you have a timing machine to observe the changes which take place as you make them. Also, it is quite interesting and informative to watch the changes in the trace on your oscilloscope.

We remember back a few years, sitting at the dinner table with Charlie Purdom and several others, when we asked Charlie this question: "Charlie, shouldn't all adjusting be done at the collet instead of the stud end of the hairspring?"

Charlie replied: "You are right, Carl, but how can I go around the country making platform demonstrations and make adjustments at the center of the hairspring? You would have to take the balance out every time and release the stud from the cock plate." So if you think you are a good enough adjuster, try making your adjustments at the center of the hairspring instead of the outside end. But, don't try it unless you are quite a capable adjuster because you will end up with a worse set of rates than you started with. Remember one thing though, all bending or adjusting at the collet end of the hairspring must be made within the first quarter turn from the pinning point at the collet. The man has not yet lived who can true or adjust a hairspring that has once been bent in any manner whatsoever beyond the first quarter turn from the collet pinning point. Remember too that if you make your adjustments at the collet you must know something about "The Solid Disc Theory" of the hairspring. Briefly stated this theory is: The center four or five coils of any hairspring are the same as though they were a solid disc of metal. Train your pivot loupe on these coils and observe their action. See what is meant? Lossier overcame this theory when he worked out the Lossier Inner Terminal Curve. Did you ever work on a 16-size Waltham railroad grade watch which was equipped with this inner terminal curve hairspring? So far as we know, Waltham was the only American watch company who ever marketed such a watch. We have a 23-jewel Vanguard, 16-size, equipped with one of these hairsprings and it is the most wonderful timekeeper we have ever seen, not even except-

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ing Marine Chronometers. We have it so adjusted that it is affected only by changes in barometric pressure and humidity. Believe us or not, it runs within two to three seconds a month. Later on we are going to publish some oscillograms of this watch and let you see what a really good timekeeper looks like.

If there are any readers who would like to have this or any other of our charts as photographic enlargements, they are available in 5″ x 7″ size for $1.00 each, and 8″ x 10″ size for $1.50, which is the same price as our oscillograms. All charts will be available as photographic enlargements after they have been published in A. H. & J., but not before publication.

Each month hereafter we will publish one of our charts and continue doing so until they have all been published.

Coming Conventions, 1954

June 27, 28—New Hampshire Retail Jewelers Association Annual Convention, Wentworth-by-the-Sea Hotel, Portsmouth, New Hampshire.

July 25-29—NJA Annual Convention and Jewelry Fair, Conrad Hilton Hotel, Chicago, Illinois.

August 8-12—ANRJA Annual Convention and Trade Show, Waldorf-Astoria Hotel, New York City, New York.

September 4, 5, 6—United Horological Association of America Annual Convention, Jung Hotel, New Orleans, Louisiana.

September 5-7 Ohio RJA, Netherland Plaza hotel, Cincinnati.

September 12—Retail Jewelers Association of Missouri, Inc., Annual Convention, Governor Hotel, Jefferson City, Missouri.

September 12, 13, 14—Minnesota Retail Jewelers Association Golden Anniversary Convention and the Eighth Annual Jewelry Trade Show, Nicollet Hotel, Minneapolis, Minnesota.

September 19, 20—Iowa Retail Jewelers Association Annual Convention, Hotel Fort Des Moines, Des Moines, Iowa.

September 19-20 Michigan RJA, Hotel Hayes, Jackson. Exec. Sec.: F. E. Foldey, 1504 Olds Tower building, Lansing.

Jewelry Repairing

By R. ALLEN HARDY

CHAIN SOLDERING

FOR PRACTICE in chain soldering one may start by using simple jump rings (sterling). These are inexpensive and can be used over and over for practice.

Starting with the largest size, solder the joints using the smallest possible amount of solder, just enough to hold securely. The reason for using a minimum amount of solder is an obvious one when the situation is studied. An excess of solder will demand filing and polishing. No excess means no filing—no polishing, except a slight touch to restore brilliance.

Oval jump rings more nearly resemble chain links. Starting with the largest available size solder the first joint. Join the second jump ring to the first; join the third to the second and so on until a chain of 8 to 10 links is made. Examine the joints to see if a correct amount of solder is being used. Just as in sizing rings, it is important to carefully see that all joints are flush to insure strong smooth joints.

After some skill has been acquired soldering the largest rings, gradually reduce the size of the rings until the smallest available jump ring is soldered with ease.

So far only a degree of soldering skill has been gained and the real problem is soldering an actual chain with all its peculiarities. There is nothing consistent about chain soldering for they may be of any shape or size. Even the largest and apparently simple jobs may be hard to handle because of an unusual twist or bend given to the shape of each link in the manufacture. Naturally the successful job is one where the contour of the link is not destroyed, but matches all the others perfectly. Also, the soldered joint should be so carefully hidden (or camouflaged) that it is not detectable.

For example, when soldering a watch chain (which has fairly large-size links) the broken link is often useless or lost and it is necessary to saw through another link in order to connect the chain and solder. The best place to saw through is at either end, where the curve is more severe. (Most chains of this nature have links of a general oval shape). To solder place the chain in a position as shown in Figure 12, on top of an asbestos soldering block. If a flame is used a hot bed may be created about a half inch away from the joint. The heat from the hot bed will dry out the flux on the joint and secure the unmelted solder in position. Gradually move the hot bed over to the joint until the solder flows.

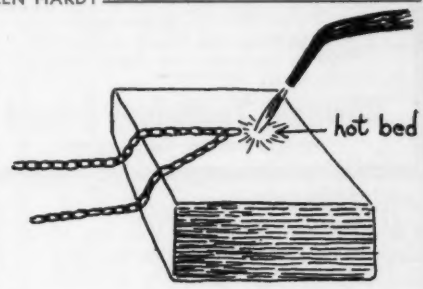

Fig. 12

If the beginner has many size chains with which to practice, it would be wise to gradually reduce the size of the chains, following the same technique. One rather phenomenal factor to watch for is this: when the tiniest chains are placed in position for soldering and the usual hot bed is brought closer and closer to the joint, the solder often flows without the flame ever touching the metal. This is because the amount of solder required is hardly larger than a pinpoint.

And the heat generated in a "hot bed"

Mr. Hardy invites your questions pertaining to jewelry repairing. Questions should be directed to Mr. Hardy, c/o The American Horologist & Jeweler, Box 7127, Capitol Hill Station, Denver 6, Colorado. Please enclose a self-addressed, stamped envelope.

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is of much greater intensity than any other kind, inasmuch as very little of the heat is dissipated or lost; rather, it is concentrated in such a way that it seems to build up or become increasingly intense. Great care and watchfulness is demanded at this point, as melting a section of the small chain is quite an easy thing to do.

When mastery of these small chains is finally accomplished one can safely assume that a great deal of soldering skill has been acquired.

There are many varieties of chain construction some of which present special problems. These are snake chains, rope chains, simple link chains, twisted link chains, fancy link chains and a variety of others. Occasionally some fancy snake or rope chains cannot be soldered without "freezing" or leaving a section (around the joint) stiff. It is well to explain this possibility to the customer before soldering.

Many chains brought in for soldering are too inexpensive to bother with or may be worn out. Most particularly, watch for the worn out chain, for this can be a source of extreme annoyance, a loss of time and money. Small chains that are worn out are quite hard to detect as the worn or thin links are not readily visible. Close examination with an average watchmakers loupe usually shows up the situation.

Worn out chains often are repaired easily, only to be returned 10 minutes after delivery because it has come apart again. Of course, it has come apart at a different link but the customer usually is under the impression that the original break (which is now the strongest link in the chain) has parted again. Result—a no-charge job.

Cleaning and polishing chains can be quite a "ticklish" job. Imagine what can happen if, when attempting to buff an average chain it becomes entangled in the brush. Chains are more apt to be "snatched" into the buffing machine if carelessly handled.

It is sometimes possible to solder and restore the appearance of small chains without using the polishing machine. After soldering, place the chain in the pickle solution to remove oxidization. Then lay the chain on a flat surface and, using a stiff bristle hand-brush, scrub the soldered area briskly with baking soda slightly moistened. If the joint is not badly discolored, this often restores the appearance. If however the area still looks dull and needs further attention it must be buffed. Carefully wrap the section (to be buffed) around any smooth piece of wood—the base of an emery hand buff will do very well. Holding the excess chain in one hand (firmly so that no slack is evident on the section to be presented to the bristle brush) lightly touch the chain to the rouged buff (tripoli is almost never needed on small chains). Do not over-polish because it is possible to complete the job only to find that the section you have worked with is more brilliant than the rest of the chain.

So far we have discussed only simple link chains of various sizes. These will account for the majority of the chain soldering jobs although there are many, many different styles and types of chains. Even the link chains will vary considerably in shape and design though the method of repair will remain the same.

The really fancy variety of chains such as snake, rope etc. will present some very tricky situations that require a great dexterity with the soldering torch or machine. For instance, a snake chain that is broken should be soldered with a minimum

heat to prevent a "frozen" or "stiff" section around the joint. A minimum of solder and a minimum of flux is used here for too much solder causes the joint to "freeze" and too much flux will cause the solder to flow excessively, again causing the joint section to freeze. It appears then that to successfully solder a snake chain is little short of a miracle but such is not the case. Careful application of flux and a minimum amount of solder are the most important points to observe.

To solder a snake chain successfully, a soldering block may be used to great advantage since the chain may be pinned (with short, bent sections of steel binding wire) to the pad. The carbon pencil is handy for this job if the machine is used. The flame is a very good medium for this job since, once the chain is pinned in position, there is nothing to disturb it or cause the correct position to shift.

Broken rope chains may be fitted into position, pinned to the pad, and soldered much in the same manner. Designs will vary of course and one will be required to "think out" the situation in advance before haphazardly beginning to solder.

One job, frequently encountered, is the snake watch bracelet which has broken at one of the tips, or where the ends are solderd to the fittings. To simply solder the two ends is often quite useless since this particular spot seems to get more action or stress than any other section of the bracelet. It will often break again shortly after soldering. The most satisfactory way to do this job is to heat the fitting that still contains the very short end or section of the snake chain. As the melting point of the solder is reached, force out the useless end and discard it. Place the good end in the fitting and solder as it was originally done when the bracelet was manufactured. Now the bracelet is like new, no solder joint, although it is slightly shorter. Often the difference in length is not noticeable, and if it is, the adjustable catch usually takes care of the situation. It is a good idea to tell the customer just what the problem is before soldering and when they find it can be repaired without making a visible solder joint, though it becomes slightly shorter, they are usually well pleased.

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Dear Mr. Hardy:

I am sending you a picture cut from a supplier's catalog. Would you recommend a blow pipe outfit of this sort for jewelry repair work? I am a watchmaker in a store and as there is not natural gas lines and no room next to the modern fixtures for an oxygen tank, this outfit looked good. Before I invest the money in it though, I would like your opinion of it, or maybe you can suggest something for someone in my situation.

I would like to compliment you on your very fine articles and hope that when it is finished, it will be put in book form for easy reference.

JACK SAVITZ

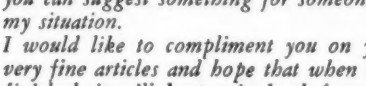
5716 Farragut Road
Brooklyn 34, New York

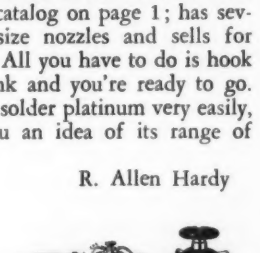
Dear Mr. Savitz:

Thank you for your kind remarks concerning my articles. Actually I do not doubt that the blowpipe outfit you mentioned will work—how satisfactorily I cannot say because I have never worked with one.

If I were purchasing an outfit other than the natural gas-oxygen arrangement I believe I would consider a torch outfit that uses acetylene gas (which is easily obtained in small tank form). The outfit I have in mind is illustrated in the latest C. & E. Marshall Tool catalog on page 1; has several different size nozzles and sells for around $9.00. All you have to do is hook it up to the tank and you're ready to go. This outfit will solder platinum very easily, which gives you an idea of its range of heat.

R. Allen Hardy





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Dear Mr. Hardy:

In the March issue of the American Horologist & Jeweler I read your article on "Jewelry Repairing" with respect to soldering, which I found most informative.

I am a watch repairman and have turned down many watch case repair jobs where the spring bar was worn through. I would appreciate any information you could give me in regard to the type of soldering machine and material necessary for this type of work. I have several watch cases on which I can practice with the aid of the March issue of your magazine.

As a general note of interest, I still have the first issue ofthe American Horologist & Jeweler I received in 1944.

F. L. GAISER

Route 1, Box 202
Topanga, California

Dear Mr. Gaiser:

Thank you for your kind remarks concerning my article on "Jewelry Repairing". In answer to your inquiry concerning "case repair jobs where the spring bar was worn through" I do think you must mean where the "lugs" or rings are worn through (depending on the style of the watch case). Many old type watch cases with lugs for attaching bracelets, cords or ribbons frequently need repairing because the lugs wear thin or break off.

Depending on the quality of the case an entire new lug made of gold or gold-filled wire may be soldered to the case after removing all traces of the old lug by careful filing or by heating the joint with the soldering machine carbon, thereby lifting the piece away as the melting point of the solder is reached. Shaping the length of wire exactly like the one on the opposite side is hardly a problem. Sometimes, though, it becomes necessary to use binding wire to hold the new lug in place until soldered. This is done by placing the lug

in position and gently wrapping the pliable binding wire around the case and lug until steady and secure. Then by using a carbon pencil attachment or regular carbon finely pointed, the actual soldering operation may be undertaken.

Care must be taken not to mar the surface of the gold or gold-filled case and with the soldering machine there is more risk of doing this than with a flame soldered joint. Depending on the design of the case the carbon may be applied to the inside of the case directly underneath the tip of the lug to avoid marring the case.

If the case is a lady's case of modern design, the lug is more apt to be in the shape of a small ring large enough to accommodate the average size bracelet cord. These can wear through and often do. To repair them it is usually simple enough to build up the worn part by shaping a piece of like metal, fitting it over the worn section and soldering.

Again, the flame is superior to electric soldering in the instance, since it is a definite advantage to heat a broad rather than a concentrated area. After filing and polishing this type of job, it is frequently hard to tell that a repair has been made.

R. Allen Hardy

Dear Mr. Hardy:

As a regular subscriber to the A. H. & J. and an ardent follower of all articles, may we compliment you on the fine articles appearing in the past. We have found them very helpful and informative.

We have mastered many of the small jewelry repair jobs and use the machine as well as a torch. However, we have come to a point in this work where we need your help. We have at the moment a five stone sapphire ring that needs some of the claws re-tipped. We are wishing to know the best way to go about this job. There are four claws to each stone with more in between and we feel that to simply turn the flame on this would ruin the good claws. Also what kind of stones will stand heat and how much? Does one remove all stones and what is the easiest way to do same? How does one solder claws amongst half a dozen others without damaging the good claws? Are there any books available through the A. H. & J. that would cover this type of work?

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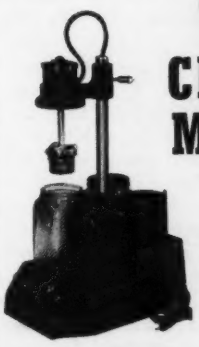

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We hope you will be able to include an article in the A. H. & J. on re-clawing rings in the near future. We also wish to obtain a good book on engraving on jewelry. We now have one by Albert A. Winter, but after practicing for some time, something is still missing and we find it a little difficult to turn out a first class job. Any other kind is not good enough. Any information you can give us will be greatly appreciated.

THOS. EDWARDS

2903 Barnard Avenue
Vernon, B. C. Canada

Dear Mr. Edwards:

Thank you for your very kind remarks concerning my articles now appearing in the A. H. & J. Your problem with the five stone sapphire ring is a very hard one to answer on paper as this type of repair job is best taught by illustration or by showing the student personally how it is done.

You have not mentioned the style of setting so I can't know what type of claw or prong is used. I imagine the stones are comparatively small and I am sure it would be much safer to remove them to solder the claws (or at least remove the stone directly being held by the claw). If there is as little working room as you say, then you may do a better and safer job using the electric soldering machine with thin pencil carbon. Soldering the prongs in this manner will not affect the nearby prongs unless they are touched directly to the carbon.

It is very hard, (though not impossible) to bring a flame down to a shape thin enough to avoid all the other prongs and when brought down this thin it is frequently too hot and will melt or damage other nearby claws before the solder joint is made. Stones are removed by using a flat graver (about #40) shaped to a thin wedge at the tip. By placing this between the stone and the prong tip the stone may be loosened by slight pressure forward. By gently and ever so slightly "wiggling" the graver, the tips may be forced upward and the stone removed.

I am requesting A. H. & J. to send you the names of books that might help you with this work. Within the next two or three months I do expect to enter into a discussion of different types of stone setting, so watch for them.

Concerning engraving books, the Albert A. Winter book that you now have teaches some very good technique. The Bergling book on art monogramming and lettering is also an excellent book to have for advanced work in designing. Still, there is another book due to be released this year that I am sure you will find most helpful in finding that certain "something that is still missing". It is a book on engraving that I compiled while instructing at Bowman Technical School in Lancaster, Pennsylvania. It starts at the very beginning and with countless illustrations carries the student through the entire course including advanced work. Watch for the first edition. It should be offered soon.

R. Allen Hardy

Dear Mr. Hardy:

I am reading with interest your series on jewelry repair (a phase of work I did not get in watchmaking school) in the A. H. & J. If there is a book for beginners in jewelry repair that gives the techniques used with an electric soldering machine, please give me the name and where it can be obtained.

O. L. HOUSE

Greensboro, Georgia

Dear Mr. House:

I am glad to know that my articles on jewelry repair are of interest to you. I am sure you will find, as you continue to read them, that the basic principles of general soldering work are quite simple and that continued practice on your own will develop technique far better than anything you will ever read.

For your reference I would suggest the Replinger book on jewelry repair for general information. Any company manufacturing or selling electric soldering machines can supply you with a book of instructions that goes with the machine.

After all, learning to successfully operate the machine you have access to is of first importance and that particular handbook would be most valuable.

R. Allen Hardy

A Swiss Watch Masterpiece— Over a Million Years too Soon

IN 1890 A SWISS watchmaker produced a watch — a million-and-a-half years ahead of its time.

Horologists speculate that the watch, based on a metric system which divides time into decimal fractions, may in the light of recent astronomical discoveries prove to be the timekeeping solution of the future . . . but a very remote future.

Their reasoning stems from the fact that this planet is slowing down, and that at the present rate of retardation, the solar year will lengthen to 10,000 hours—an ideal figure for metric division—in approximately 1,480,000 years.

Inventor Rene Bloch's curious timepiece divides the 24-hour period into ten "metric hours." They, in turn, are subdivided into tenths and hundredths—"metric minutes" and "metric seconds." Bloch did not originate the system—his claim to fame was devising a mechanism that made the system work.

The history of his metric watch goes back to the French Revolution. And although many remember that in 1792 the French National Convention decreed a new calendar to date from the proclamation of the First Republic, most historians have all but forgotten another act of the Convention which called for a "decimal graduation of time." The latter decree stipulated that the day be divided and subdivided into tens, and that all clocks and watches be changed to this system.

Both the calendar and decimal time-telling proved awkward and impractical, and were abolished by Napoleon. However, a few of the decimal watches were made in France and in the Swiss watchmaking town of Neuchatel. They were ordinary timepieces with the addition of a concentric circle of numbers on the dial so that they indicated hours both ways.

Bloch went even a step further. He created a watch movement with metric oscillations. Time elapsed between one metric hour to the next is two hours 24 minutes; the metric minute corresponds to 14 minutes 24 seconds; and the independent second hand is geared to record hundredths, each equalling 8.64 seconds.

There was considerable technical precedence for Bloch's achievement. Earlier horologists in and near his native watchmaking town of La Chaux-de-Fonds had made the first self-winding timepieces and had perfected the perpetual calendar watch by devising a tiny cog wheel that makes only one revolution every four years to give February its 29th day in Leap Year.

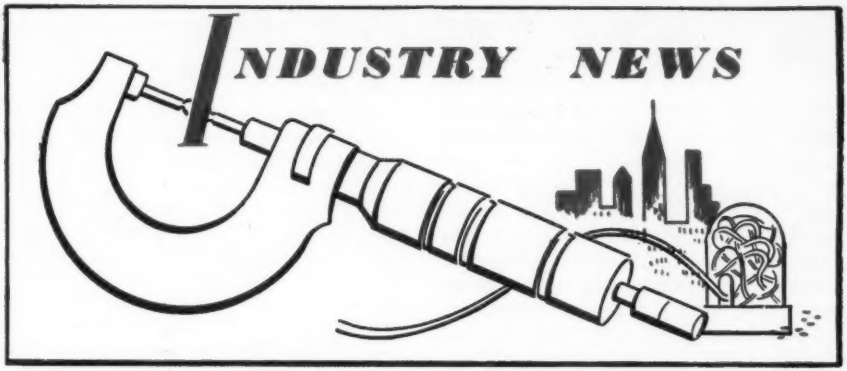
Why Bloch took the pains to create his metric wonder is still a riddle. Some claimed that he did it just to prove it could be done. Others asserted that he visualized his timepiece, together with the then-popular idea of calendar simplification, as the universal time recorder of the future.

The argument will never be settled because Bloch took his explanation—if there was an explanation—to his grave with him. But his metric watch, which won him a gold medal in a competition of horological innovations, remains behind to baffle this and future generations.

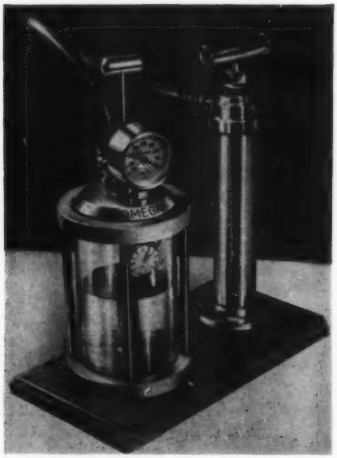
METRIC MYSTERY

The reasons which prompted Swiss Watchmaker Rene Bloch in 1890 to invent this metric watch, which may become practical in a million and a half years from now, have never been explained. Each 24-hour period is divided into 10 "metric hours" corresponding to two hours 24 minutes of orthodox time apiece. These in turn are subdivided into tenths and hundredths representing "metric minutes" and "metric seconds."

Shown with the watch is the gold medal awarded to the inventor for his achievement.



OMEGA VACUUM PUMP TESTS WATCH WATER RESISTANCE



To help watchmakers and jewelers solve the problem of restoring the original water-resistance of a water-proof watch, after the case has been opened or the crystal broken, Omega is offering the same type of testing equipment used successfully in the Omega factory in Switzerland.

A unique, easy-to-operate vacuum pump which permits immersing the watch in a cylinder of water, without risk to the movement, has been made available by Omega. Escaping air bubbles reveal the location of leaks, if any. The vacuum in the pump forces air out of the watchcase if it is not absolutely watertight, but water cannot get into the watchcase.

The Omega Vacuum Pump, which permits quick, foolproof demonstrations of water-resistance, is only 12 inches high and 6 inches deep, and costs $42.50. Full details are available from the Norman M. Morris Corp., 655 Madison Ave., New York 21, N. Y.

MARSHALL COMPANY MAKES GIFT PRESENTATION ON TV

Left to right: Tommy Barlett, star of "Welcome Travelers"; Dorothy Vaughn; Jack Marshall, G. & E. Marshall Co., and Bob Cunningham, co-host of "Welcome Travelers."

On May 6, for the first time in the history of television, a watchmakers' supply house was presented on a nation wide program.

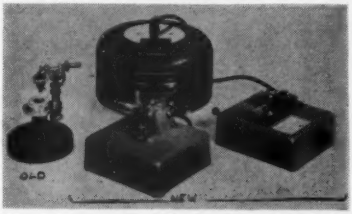
C. & E. Marshall Co., through hosts of the coast-to-coast television and radio show, "Welcome Travelers", presented Miss Dorothy Vaughn, a polio victim six years ago, with the equipment and tools necessary to establish her own repair shop.

Miss Vaughn, after a convalescence at Warm Springs, studied watchmaking at

the suggestion of her vocational counselor. On completion of the course, Miss Vaughn could repair watches, but lacked the necessary equipment.

Two representatives of the Marshall firm were on the show to surprise her with all the equipment she would need to establish a full-fledged repair shop.

ELECTRONIC INSTRUMENTS VIBRATE HAIRSPRINGS



Two new electronic instruments for vibrating hairsprings, developed after many years of research, are now being used exclusively by Hairspring Vibrating Co. of Union City, N. J.

Frequencies range from four per second for watchmakers to 100 per second for research laboratories, jet aircraft, Bureau of Standards, guided missiles, and Atomic Energy Commission. The salient features of these new electronic units are: 1) an electronic ear which picks up the frequency of the balance in exactly the same manner that it functions in the watch or instrument. It does not inject errors such as bouncing the wheel or interfering with hairspring movement; 2) a constant motion is maintained by a reciprocal air jet; 3) uninterrupted oscillations are measured against an electronic frequency standard.

Charges for vibrating hairsprings are $1.75 for flats and $2.50 for Breguets. Staff service, including staff fitted, balance trued and poised and hairspring adjusted costs $1.75. Staff, if ordered with new hairspring, returned in Vibra Pac container is $1.25.

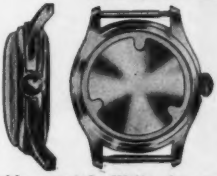
For further information on electronic hairspring vibrating by this new method, write to Hairspring Vibrating Co., 406 32nd St., Union City, N. J.

VIBROGRAF CORP. APPOINTS GRAMERCY FOR ADVERTISING

The Vibrograf Corporation, 15 W. 46th St., New York City, has announced the

Water Resistant Cases

IMPORTED! IMPRESSIVE!



10½L, 11½L

ALL CALIBERS

$1.25 Each, in Doz. Lots Attractive Discounts on Larger Quantities Precision finished, nickle chrome with S/S back, unbreakable crystal. Write for money-saving prices on cases for automatic and nurses' watches. Available also in all S/S, and G/F top with S/S back.

Service & Material Dept.

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15 West 47th St., New York 36, N. Y.

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A. R. & J. E. MEYLAN

Stop Watch and Chronograph Materials

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Mail Orders Promptly and Expertly Filled for Any Type Swiss or American Watch Materials, including Hard-to-Get Materials, At No Extra Cost.

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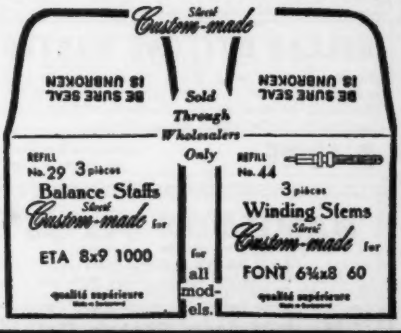
21 Maiden Lane **New York 38, N. Y.**

BUY THE BRAND THE EXPERTS CHOOSE!



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Your
Perfect
Quality
Jewelers' Findings

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THE NEWALL MFG. CO.
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Save on Used Movements

For all purposes . . . practice or replacement.
Practice movements for students.

SWISS	BULOVAS & GRUENS	WALTHAM & ELGIN POCKET WATCH MOVEMENTS
All Sizes, 6x8-10½L, 8x9, etc.	15-Jwl. $7.00	(12 & 16 size)
7-Jwl. $5.75	17-Jwl. $8.00	7 Jwl. $6.00
17-Jwl. $5.00		15-Jwl. $6.00
10 Ass't. Used Swiss Watches 7, 15, 17 Jewels need cleaning only $20.00	WALTHAM & ELGIN	17-Jwl. $8.00
	16/0, 21/0, 18/0, 8/0, etc.	21-Jwl. $15.00
		(18 size)
5 American Pocket Watches need cleaning only $15.00	7-Jwl. $4.50	7-Jwl. $2.50
	15-Jwl. $6.50	15-Jwl. $3.50
	17-Jwl. $8.50	17-Jwl. $4.50
		21-Jwl. $11.00

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20 Ass't Swiss Practice Movements.....$10
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25% with Order—Balance C.O.D.

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MICHIGAN DIAL REFINISHING COMPANY

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Cash paid for Dead Stock of Jewelry, broken antique jewelry, stick pins, cuff buttons, findings, broken bands, platinum. Check sent promptly. Satisfaction guaranteed.

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HAMILTON 992 Bs

Prices from $35.00 to $40.00
CAN'T BE TOLD FROM NEW
R.R. Watches, all kinds; Wrist watches by ELGIN, HAMILTON, BULOVA
Write for Latest Price List

Mark-Nelson Watch Co.
1212 Holland Bldg., St. Louis, Missouri

Continued

appointment of the Gramercy Advertising Co., Inc., 30 Central Park South, to handle all advertising, sales promotion and publicity in the United States for the Vibrograf Electronic Watch Timing Machine.

The Vibrograf is produced in Switzerland, and is being introduced for the first time in the United States this year. Almost every watch movement made in Switzerland today is timed and tested on a Vibrograf Electronic Watch Timing Machine, which has numerous exclusive design and operating features.

In addition to the Vibrograf Corp., Gramercy Advertising Company is handling the advertising for Certified Metals Co., ring manufacturers in Newark, N. J., and The Mautner Co., jewelry box and display manufacturer of New York. Gramercy Advertising recently aided in a successful sales campaign of Remington-Rand electric shavers.

J-B INTRODUCES LINE OF PHOTO-VUE IDENTS

A new line of Photo-Vue Ident-I-Bands has been released by Jacoby-Bender, Inc., manufacturers of nationally advertised J-B Watch Bands. These Idents carry the registered trade name, "Photo-Vue", and include an unbreakable crystal protector over the photograph.

The crystal protector holds the photograph securely and helps to keep it clean and dust free. It is easily removed and snaps back into place after the photograph is inserted.

The J-B Photo-Vue includes five models for men, two of which are in stainless steel, and three models for ladies, one of which is in stainless steel. The all yellow gold-filled gents' models retail at $10.50 and $11.50, tax included, while the ladies' gold-filled models retail at $9.50 and $9.95. The stainless steel models retail

at $7.95 and $8.50, and have sterling silver placques which may be engraved.

Free window display units with each four Photo-Vue-Idents purchased are available, in addition to newspaper mats.

NEWSCASTER IS CLOCK FANCIER

An appreciative interest in the work of the horological masters of the past is the common attraction that draws 20,000 persons annually to Clock Manor in Denver, Colorado. One of the recent visitors of note to the horological museum was Alex Dreier, popular NBC news commentator and himself a clock fancier, shown above at right with Orville R. Hagans, owner of Clock Manor. Occupying their attention at the moment is the Empress Josephine clock, a star museum exhibit. Following his visit, Mr. Dreier featured Clock Manor and Mr. Hagans' definition of time on two of his national network broadcasts.

TRADE NOTES

Announcement has been made that Harold Scharaga of Adelson & Segall, and Irving Kimler, formerly of Kimler & Daniel, are the new owners of Adelson & Segall, Inc. As jobbers in watch materials, Adelson & Segall, Inc., is doing business at 96 Canal St., New York 2, N. Y.

* * *

The firm of David Kaplan, 69 Chrystie St., New York City, announced recently that it carries a full line of fine used watch movements which are suitable for replacement and rebuilding. The firm also has a full line of watch materials.

* * *

Joseph DiTusa, 93 Nassau St., New York City, announces that his watch dial refinishing service covers a wide range of dials including white, colored and black backgrounds, diamond dials, and chronograph dials. In addition, printed, radium, gold and dotted numbers are available.

No. G. 809-17J. A. S. Mvt. R. G. P.—Steel Back Strapped—Special $10.75
Prices Do Not Include Postage
Write for folder illustrating our latest specials in watches and attachments.

RESSEL WATCH COMPANY
Importers & Distributors of Fine Watches & Attachments
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MICROTIME WATCH and CLOCK OILS
BEST by TEST
Order Through Your Jobber Now
THE NEWALL MFG. CO
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WATCHMAKERS • JEWELERS
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WE RECOMEND SPECIAL FOR THIS MONTH:
Seitz Friction Jeweling Tool — Seitz Jewel Assortments — Jacob Pivot Lathe — Screwplates — Jewel Hole Gauge — Micrometer — Needle Files. Special wholesale prices. Inquire.
We carry all domestic and foreign tools—all materials—all supplies—all books. State your requirements for catalogues and free information.
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• Workmanship of the highest standard •
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Edwin B. Burt
DIAL PAINTERS
SINCE 1923

CLOCK DIALS REFINISHED
HAND DIAL PAINTING
21 Loring Rd., P.O. Box 65
Auburndale 66, Mass.
Send for Illustrated Price List

Full information and price list is available on request.

* * *

Leader Jewelry Company announces its removal to new larger ultra modern quarters at 71 Nassau St., New York City. The new offices will enable the firm to provide better service on all kinds of watch cases and dial sets, as well as a complete line of watchmaker tools, supplies, etc. Leader's new phone number is WO 2-3165-6. An illustrated catalog showing the complete Leader line is available on request.

G. I. A. ELECTS OFFICERS AND BOARD MEMBERS

At the annual meeting of the board of governors of the Gemological Institute of America which met in Detroit April 3, elections were held to select officers and board members for 1954-55.

Dr. Edward H. Kraus, Dean Emeritus of the College of Literature, Science and the Arts of the University of Michigan and senior author of *Gems and Gem Materials,* was re-elected president of the Institute for the ninth consecutive year. Charles D. Peacock, III, of C. D. Peacock, Inc., Chicago, was elected to serve his second term as vice-president. Fred J. Cannon, of Slaudt-Cannon Agency, Los Angeles, was re-elected secretary-treasurer.

Percy K. Loud, recently retired from Wright, Kay & Co., Detroit, was re-elected chairman of the board of governors. Also re-elected was Carleton G. Broer, Broer-Freeman Co., Toledo, as vice-chairman of the board. Dorothy Jasper Smith, Los Angeles, was re-elected as secretary to the board of governors.

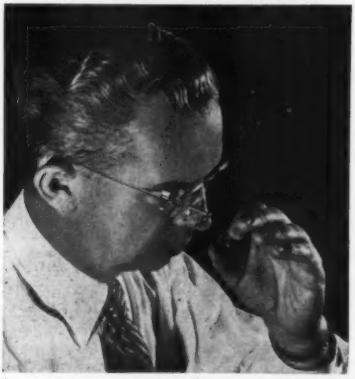
HAMILTON BUYS BACK BENRUS-OWNED STOCK

The Benrus Watch Company and the Hamilton Watch Company jointly announced recently that the Hamilton Watch Company has purchased the 92,000 shares of Hamilton common stock owned by the Benrus Watch Company of New York City.

These shares were originally purchased by the Benrus Watch Company during 1952 and have been held since that time by Benrus. Hamilton announced that there would be no change in its capitalization, but that these shares would be held in the treasury. Officials of the Hamilton Watch Company stated that it is not planned to retain these shares in the treasury permanently.

All litigation pending in the Federal District Court in New Haven, Conn., will be discontinued by consent of both companies.

BAUSCH & LOMB ANNOUNCES NEW TYPE EYEGLASS LOUPE



A new type watchmaker's eyeglass loupe which may be used interchangeably on metal or plastic spectacle frames was announced recently by the Bausch & Lomb Optical Co., Rochester, N. Y.

The loupe comes with single or double lenses. Single lens model has a range of five focal lengths, 3½, 3, 2½, 2 and 1½ inches, and the double lens model

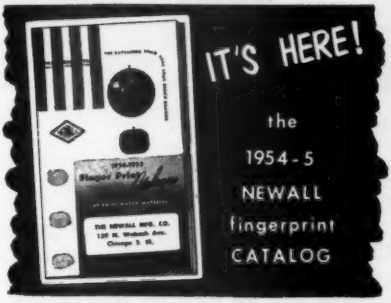
provides alternative focal lengths of 2½ and 1½ inches, depending on whether one or both lenses are used.

Because of the popularity of having several pairs of glasses available foru se, the new loupe was designed to fit any regular dress or sportstype eyeglass frame. A two-way clamp accommodates either a thin metal or a thick plastic bow.

When not in use, the loupe swings out of eye range on a spring pivot. The frame is finished in gold.

The single lens model is available at $3.25, the double at $5.25.

NEW NEWALL CATALOG NOW AVAILABLE AT JOBBERS



The Newall Manufacturing Co., Chicago, has announced the availability of its new 1954-55 Fingerprint Catalogue, which features 244 pages of information for the watchmaker.

Such new features as a chronograph section, parts dictionary, interchangeable parts and movement list, and German watch material have been added to the catalogue.

The new Newall Fingerprint Catalogue has, as previous editions, been published in the bench drawer size for convenience to the watchmaker. It is available at all jobbers.

COLORADO JEWELERS SUPPLY NEW MARSHALL DISTRIBUTOR

Colorado Jewelers Supply Co., new distributor of C. & E. Marshall Co. products, recently announced the formation of a new Colorado corporation, headed by Theodore (Ted) Miller, president.

This company has purchased the assets of H. & H. Horological Supply Co., including merchandise stocks, fixtures, good will and accounts receivable. The company

SPECIALISTS IN HARD-TO-GET PARTS
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Used Movements - Needing Cleaning Only
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NEWALL QUALITY CROWNS
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Order Through Your Jobber Now!
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SCRAP vs. MOVEMENTS
20 Watch Movements sent for 1 lb. of any G. F. Scrap you send us.
5 American Pocket Watches $22.00
10 Swiss High-Grade Wristwatches 18.00
5 American Wristwatches: Elg., Walt., etc. 18.00
15 Wrist Mvts., lever escapements 5.50
5 Antique Silver Watches $15.00
Above need minor repairs. Write for price list.
B. LOWE, Holland Bldg., St. Louis 1, Mo.

HIGH QUALITY Waterproof Crowns
WATCH CROWN ASSORTMENTS
SCREW DRIVERS
PIN VISES, ETC.
ACON WATCH CROWN CO.
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Manufacturers of Gold Filled Crowns
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It's more than a personal matter when you need "Hard-to-Get" Watch Parts in a hurry—it's customer satisfaction, too! POLTOCK has EVERYTHING! Write Dep't. A for FREE Ligne Gauge, Catalog and Stationery. JOHN A. POLTOCK & CO., 15 MAIDEN LANE, NEW YORK 38, N. Y.

REMEMBER
Aristo
when in need of
Stop Watches-Chronographs
Aristo Import Co., Inc.
630 Fifth Ave.
New York 20, N. Y.

is now located in newly remodeled offices on the first floor of the Jewelry Center Building, 603 12th Street, Denver.

Other companies allied to the jewelry industry, including Albert F. Long, wholesale jewelers, are also located in this building.

Colorado Jewelers Supply Co. is a complete supply house with a complete stock of watch material, watch crystals, tools and jewelers' supplies. They feature Marshall Add-A-Unit Systems.

NEW MAINSPRINGS ARE GUARANTEED

Ev-R-last, a new kind of mainspring, is now being offered to watchmakers for the first time. It is made of a special alloy steel, which is rust resistant and guaranteed in writing not to break for the life of the watch.

Because of this written guarantee, printed right on the envelope containing the mainspring, it is anticipated the watchmakers will be able to charge a little extra for mainspring repairs when they use Ev-R-last.

At the present time only 24 of the most popular numbers are available, but more are expected to be ready soon. Hammel, Riglander and Co., Inc., is the exclusive distributor of Ev-R-last mainsprings, which can be ordered through material supply houses.

OLD-TIME CLOCKMAKERS

This interesting photo showing four old-time clockmakers of Cleveland, Ohio, was submitted by Mr. Joseph J. Williams of 2029 East 102nd Street, Cleveland 6, Ohio. They are, top row, left to right: Carl Rutenbeck, Hugo Hill. Bottom row, left to right: Joseph J. Williams, Charles Rodig.

Guild & Association News

COLLECTORS' CONVENTION DRAWS 300 ATTENDANCE

NAWCC Convention visitors enjoyed a fascinating display of rare clocks.

The following was received from Mr. Barny, associate editor of the American Horologist and Jeweler:

To say that the convention at Canton, Ohio was a success this year is to put it rather mildly. The committee went all out to prove that the little big city could and did surpass anything that had ever been done before.

Collectors came from far and near. Johnny Lightstone from Canada, Dick Van Hoosear and Dr. Stevens from San Francisco, Ted Lang from Minnesota, the Averys from Massachusetts, Harry Yaseen from Chicago and Paul Blanchat from Wichita, Kansas. Al Scott and a contingent from Detroit were also in attendance. There were lectures by Prof. E. H. Johnson of Kenyon, Harry G. Berks of Boston, J. Lightstone of Canada. O. T. Lang of Minnesota, J. W. Gibbs of Philadelphia, Mr. Barny of New York City, Harry Yaseen of Chicago, Tom Micheals of the Ford Museum, and R. C. Morrell, curator of the Bristol Museum.

Another highlight was the cocktail party given by Wes Hallet. A large number of timepieces were brought in for display, the Ford Museum was well represented with watches, Fred Selchow brought many rare American clocks along with the Beckhams of Washington.

The next convention will be held in

Washington, D. C., May, 1955. Many thanks go to George Shaw and his wonderful committee for their excellent performance in behalf of the convention.

W. H. SAMELIUS HONORED BY LOUISIANA HOROLOGICAL ASSN.

William H. Samelius, dean of American watchmakers, was honored conspicuously at the ninth annual convention of the Louisiana Horological Association, held early last month.

He was presented with a handsome billfold, was made a life member of the Association, and received a plaque inscribed "This token of our gratitude and esteem we present to William H. Samelius, whose life and works have inspired our members."

In addition, he was made an honorary citizen of the city of Baton Rouge, La., in a certificate signed by the mayor, was given a key to the city, and was made an honorary colonel in the militia of Louisiana in a commission issued by the governor.

The honors were bestowed on Mr. Samelius in absentia, as he was unable to attend the meeting. They were accepted in his behalf by a member of the sales staff of the Elgin National Watch Co., who forwarded them to the grand old man of American horology.

NORTH DAKOTA WATCHMAKERS HOLD ANNUAL CONVENTION

The North Dakota Watchmakers and Jewelers Association held their annual convention and show the latter part of April at the Gardner Hotel; Fargo, North Dakota. The mass banquet at noon was attended by some 125 watchmakers, jewelers and their wives. Special speakers were Corey Chase, National Retail Jewelers Association, and Mr. Sparkman of the Watchmakers of Switzerland. Exhibits by 12 leading wholesalers were on display all day, and a bingo game in the evening closed the day's activities.

Results of the election of officers and directors were as follows: President, Kenneth Helmers, Lisbon; vice-president, S. D. Kivley, Minot; secretary, Art DeGree, Williston; treasurer, A. O. Finney, Ellendale. Directors are: Roy Willey, Grand Forks; Melvin Olson, Wahpeton; LeRoy Lindekugal, Steele.

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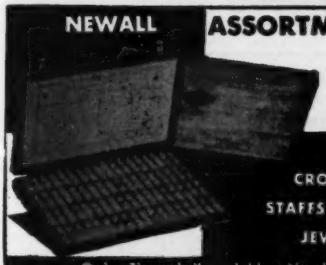
1 yr. guarantee on all dials. Complete service—refinish, modernize, personalize—watches & clocks.
FREE: If you scratch or mar dial when fitting to movement, we refinish again.
Oldest, most experienced refinishers in America.
Send your next dial order to...

U. S. WATCH DIAL CO., 64 Nassau St., N. Y. 38, N. Y.

NEWALL ASSORTMENTS



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STAFFS STEMS
JEWELS

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THE NEWALL MFG. CO.
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STUCK FOR A MOVEMENT?

or a watch part, or a difficult repair on a watch, clock or jewelry? We specialize in supplying unusual movements and parts. Write for descriptive brochure.

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WM. S. McCAW CO.
WATCH MATERIALS — JEWELERS' SUPPLIES
JEWELRY — FINDINGS
Room 215-218, 320 Superior St. Toledo, Ohio

Publisher:

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Box 7127,
Capitol Hill Sta.
Denver 6, Colo.

Please enter my subscription to the American Horologist & Jeweler at the subscription price of $3.00 per year.

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A. H. & J.—6-54

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UNDER ALL CLASSIFICATIONS, excluding Positions Wanted, $2.50 for the first 25 words, ten cents for each additional word.

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BOX NUMBERS, or Blind advertisements, 50 cents additional for postage and handling.

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Repaired for the trade
WatchMaster tested
Write for price list
C. L. Penrod, Watchmaker
% Ent Air Base PX
Colorado Springs, Colorado

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TRY MY WATCH REPAIR SERVICE
WATCHMASTER TESTED
DAVID G. PHELPS
701 PERSHING AVE.
WHEATON, ILLINOIS

OLD WESTERN COMPANY
Offers Complete Watch Repair Service for the Trade. Send for Price List.
K. H. FRIEDLY
P. O. Box 1205
Burbank, Calif.

Guaranteed — Expert
Watch & Clock Repairing
Specialized in
Seth Thomas Clocks
K. A. Kruger
Certified Watchmaker
47 Marine St., Thomaston, Conn.

NEW CLOCK MATERIAL
Junghans, Becker, Keizle, Mauthe, French, Herschede, Revere, Kundo, Schatz and Cuckoo, Seth Thomas, Antique Parts, 400 day, American Chime and others. Dial, Weight Shells, Pendulums, Metal and Wood Case Refinishing of all types. Send Part or Movement only. Vin Acco Time Repairs, 2221 Fowler Street, Cincinnati 6, Ohio.

CLOCKS REPAIRED, ALL MAKES
Foreign and domestic spring, weight and electric special movements—prompt service. Work guaranteed.
GEM CLOCK SERVICE
5423 West 25th St.
Cicero 50, Ill.

TWEEZERS RECONDITIONED
Expert work, old watchmaker-toolmaker. Satisfactory service guaranteed. 50c A PAIR—plus postage and insurance. THE HOME SHOP, % G. C. FELLOWS, Box 156, Sanford Florida.

HAIR-SPRING
TWEEZERS
Hardened, Tempered, Sharpened
VALDEMAR VIRTANEN
Box 69, Morristown, N. J.

EXPANSION BANDS REPAIRED
FLAT RATE OF $1.00
24-HOUR SERVICE — NO RIVETS
ALL BANDS FINISHED LIKE NEW
OUR WORK GUARANTEED
EVERY TYPE OF
JEWELRY REPAIR DONE
EXPERT WATCH REPAIR
MORLEN REPAIR SERVICE
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75c plus material cost.
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WATCH REPAIRING
5-DAY SERVICE
All Work Tested On
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Price List on Request
MERIT WATCH REPAIR
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Boston, Massachusetts. Guaranteed Trade Watch Repairing. Chronographs a Specialty. Excellent service. Electric timing. Prices on request.
Charles L. Birdsall
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BETTER PAPER CLOCK DIALS
Your exact size — no trade marks — including Calendar and Steeple—Roman or Arabic. For information write Custom Dial, 5837 North Hope St., Philadelphia 20, Pa.

Wheels, Pinions, Ratchets and escape wheels made to sample.
Broken teeth replaced in wheels and barrels.
Type "C" Hammond motor replacement with self-starting synchronous motor.
Cycloid Milling Cutters.
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A Watchmaker's Watchmaker
We specialize in chronographs, repeaters, making parts, jewel fitting, repivoting, wheels and pinions made, all repairs WatchMaster timed.
H. P. Wlosko
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HIGH GRADE WATCH repairing to the trade. Chronograph and repeater specialists; 3 days' service: all work at reasonable prices and fully guaranteed for 1 year. Watches timed and tested on WATCHMASTER. Insured shop; 8 first-class watchmakers at your service. References and price list on request. Mail orders our specialty. A. H. Schierer, 101 S. Marion St., Oak Park, Ill.

Can repair 25 watches weekly at very low rates. Work guaranteed. F. S. Horological Co., Box 1191, San Bernardino, Calif.

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Stuck for a chronograph automatic or any complicated part? Send part and caliber number to Chalet Watch Co., 116 Nassau St., New York, N. Y.

Send Me One Dollar!
I send you 3 crowns, 3 stems, 3 staffs, and 1 mainspring for FF60—or for any other popular make watch. All materials guaranteed first grade.

E. A. Phillips
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